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ESA MISSION STATEMENT Promoting systems, spaces and designs for People

Letters

I enjoy Michael Patkin's occasional items in the ESA newsletter. Here is a note in the vein of the June offering:

As a father of 3 preschoolers who several times a week takes the nappy-wearing and/or toilet training offspring out into public places, may I point out that it is not only females who are inconvenienced by gender-exclusive design policies.

I have learnt to expect old places to offer nothing to visiting solo male care-givers apart from a suspicious smelling concrete floor to kneel on, but even new buildings with huge public appeal like the Auckland Sky Tower [taller than anything else here or on the West Island I gather] has baby changing facilities only in the womens toilets. Blokes 'left in charge' are clearly expected to either park the kids in day care or bring a woman with them for such purposes.

On a recent visit to this place I stood looking out at the view 1000 feet over the city and toyed with the idea of just handing my damp 2 yr old [also male incidentally] to the next female on her way into do some nose powdering and say 'excuse me but being a woman would you please go and change this for me'.

Have look on a few toilet doors in these places. In many cases room set up with a decent surface to change kids on with a tap within reach etc. - the 'mothers room' as it is often signed, is at best off the lobby of the female toilets so that you have to walk past few disgruntled ladies to do the business.

Do any of the countries that have stringent access regulations designed to include people with recognised disabilities also ban discrimination against fathers on duty? Sweden probably, but that's too far to be back in time for afternoon sleeps.

Dave Moore
Pres of NZES
SPE@massey.ac.nz

ERGONOMIC SNIPPETS

1. "Examination Paw": a coming phenomenon:

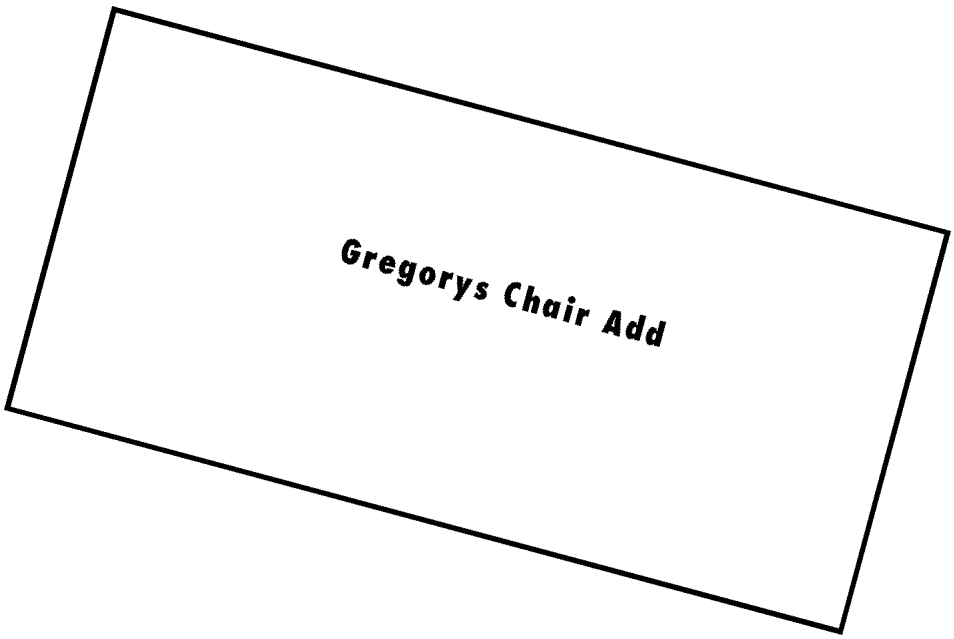
In times of change many find it necessary to upgrade and expand qualifications, and at an increasing rate. In the seventies and early eighties I taught biochemistry in New Zealand and occasionally heard a few choice comments from suffering students who had to handwrite several three hour examination scripts, with hands and fingers becoming quite painful. The problem was predominantly seen in the "study later in life" students.

Nearly two decades later I believe the situation is changing for the worse. Some of the return to study students find the pain / cramp can make a three hour exam a daunting task. After initial group of qualifications, the next major effort may be some years later. The "new" issue is that many have become reasonably computer literate and do not have the continual "muscular" training the "old" system used to demand. As a non-ergonomist I do not know how well if this phenomenon has been studied, if not .....those looking for a research project.....? ? ? ? ?

2. While having coffee recently with some"safety" colleagues I noticed an interesting situation! - a back mounted vacuum cleaner: an enterprising cleaning attendant was walking across a large foyer to a lecture theater with the vacuum cleaner strapped to his / her back. It appeared that the machine had a cord attached. What was apparent, was the ease with which the machine could be carried and its advantages, when say cleaning carpeted staircases, between rows of seats in auditoriums etc.

One would need an overstretch protection mechanism for the cord (to protect the worker), and the possibility of battery operated models is a growing possibility with lighter rechargeable batteries continually being improved.

3. A comfortable chair - a different perspective. The attached photo is of a wooden Chinese"cornerî chair. For the computer user this chair has some interesting aspects, especially for persons such as myself who at times unfortunately tend to be calorifically gifted.



I notice this year that the timings for the ESA Annual Conference and the US Human Factors and Ergonomics Society Annual Meeting overlap;our conference is being held between 5 and 7 October and the latter will be held between 5 and 9 October. I wonder whether the Society might consider this issue in setting future annual conference dates. For many ergonomics researchers and practitioners, these are two of the more significant dates on the annual conference calendar.

MEMBER'S NEWS

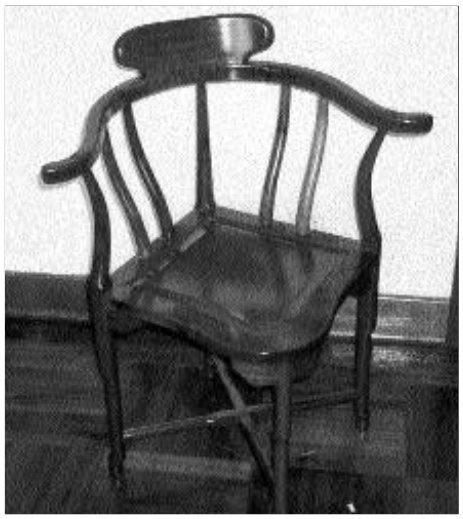
Dr Mike Regan has left VicRoads and is now working as a Senior Research Fellow with the Monash University Accident Research Centre in Melbourne. The Centre, which is self-funded, is a world leader in road safety research . Mike is currently a leading a human factors research team investigating the simulator-based training of cognitive driving skills in young novice car drivers. The simulator is the most sophisticated of its kind in Australia. Mike hopes to expand his research interests in the near future back into the areas of aviation and military human factors. Mike's new contact details are: phone 03 99051838; fax 03 99054363 email: michael.regan@general.monash.edu.au

Mike Regan

The first point is the shape of the seat, which relieves the pressure under the thighs and seems to alleviate the associated problems.

The second point is the armrests as the angles and heights of these can help take the load off the shoulders and neck. You can do limited comfortable typing with your arms rested.

The chair is not a complete answer but I feel it has some worthy points which may be worth more than a cursory investigation by a designer / manufacturer for incorporating into ergonomic chairs.



4. Dirty mice are a hazard:

The search for better computer mice is a continuing issue. We all should know the following but how many regularly clean their mouse; simply following the maintenance instructions supplied and with the device will do a lot to stop frustration and associated muscle tension when it does not follow your movements. The cleanliness of the internal rollers is critical for the mouse to work efficiently: My observations is that with many keyboard operators the cleaning of mice may not be a priority. A dirty mouse can become a biomechanical problem.

Jonathan Amies
Hong Kong
ajonathan@cuhk.edu.hk

PROFESSIONAL INDEMNITY INSURANCE

Available to Members of ESA Inc.

As from 1 October 1998 International Insurance Brokers, Aon Professional Services, South Australia, have advised lower premiums for the Professional Indemnity Insurance Scheme. The scheme is open to all ESA Members, Professional Members and Life Members, but not Affiliates.

Set out below is an example of the competitive rates for $1,000,000 cover:

Gross annual income	**Annual premium**
up to $150,000	$605 + Stamp duty & Br.Fee
$150,001 - $250,000	$827 + Stamp duty & Br.Fee
$250,001 - $500,000	$1,160 + Stamp duty & Br.Fee

Special Conditions:
Year 2000 Exclusion on all policies.

Note: The insurer has agreed to allow a 20% discount for part-time practitioners where their income is less than $10,000.

Limit of Indemnity is $1 million, any one claim and $2,000,000 in the aggregate.

Cover is also available for higher Limit of Indemnity of $2,000,000 to $10,000.000.

Policy extensions automatically included : Cost of Disciplinary Inquiries, Breach of Fidelity - $100,000, Defamation, Loss of Documents, Fraud & Dishonesty, Intellectual Property, Trade Practices Act, Joint Venture Liability, Partners Previous Business - incoming and outgoing, Prior Corporate Entity Continuity of Indemnity Period of Grace, Automatic Reinstatement, Automatic Run-off Cover.

Please note that the premium rates will vary slightly for each state with stamp duty. These rates are based on South Australia's stamp duty of 11%.

For further information and proposal forms contact:

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Ph: (02) 6242 1951 Fax: (02) 6241 2554
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Board News

ESA's Directors met over the weekend 23-24 May and concluded a large agenda. The main items / decisions are summarised.

COMPETENCIES: PRINTING AND DISTRIBUTION OF REPORT

The printing and distribution of the final report is being arranged by Past-President Verna Blewett and should be ready by 30 June. New Zealand was accepted as a joint-producer.

The previous decision on the distribution of the report was affirmed, viz the full document be provided to all members (including corporate affiliates) on request; a summary was to be listed on the Societyís Home Page on the Internet and non-members and affiliates were allowed to purchase the document at an agreed fee.

PROFESSIONAL ENQUIRIES & COMPLAINTS: PAB was asked to prepare Guidelines for the Society that will address professional enquiries and complaints, both from with in the membership and from outside of it.

A summary of the work done to date was tabled and discussed by the Board. The PAB and the Executive Officer are to revise the draft.

COMPETENCIES ASSESSMENT PROGRAM: A number of options for promoting an Assessment Program to follow-up the competencies were discussed.

SYSTEM OF COURSE ACCREDITATION: A Status Report on Accreditation of Ergonomics Education Programs Project, prepared by Jim Carmichael and Angela Summers, was tabled. The Report outlined what had been achieved within the Society since the Competencies Report, responses from other related organisations on their developments; a brief outline on the IEA position on Accreditation. The Board agreed that -

1. responses from other organisations be drawn upon to compile a possible regime for the ESA and to table at the next meeting;
2. the Convenor of the 1998 Conference be asked to arrange a time-slot in which academic members of the society and other interested parties conduct a workshop concerning ergonomics course-work; the President will chair the Workshop.

LOGO: USE BY MEMBERS: A member had approached the Executive to ask whether she could use the Society's logo on her own stationery as a means of identifying with the Society and showing the public that she is registered with a professional society.

Jim Carmichael & Christine Aickin, who had previously volunteered to act as a sub-committee examining the options, tabled their report which outlined a draft policy and conditions of use. The Board debated a number of provisions in the draft paper and decided on a number of issues. The draft was to be revised in the light of the discussion.

2000 CONFERENCE: When it was not possible to combine the 2000 Annual Conference with that of New Zealand, the Board agreed to ask South Australia to host 2000 and NSW be asked to host it in 2001. South Australia accepted the invitation as the venue for the 2000 Conference on the condition that it was managed by a Committee drawn from several Branches and that the Societyís Secretariat contribute more of the logistical work. Verna Blewett was invited to act as Convenor of the Conference.

PAB APPLICATIONS AND RECER TIFICA TION: PAB was asked by the Board to consider the processes by which prospective CPEís apply for admission and by which existing CPEs retain their status and draft a paper. Neil Adams reported on the process for re-certification. The documentation is to be sent to all CPEs.

MODELS FOR BRANCH SCIENTIFIC MEETINGS: In order to assist Branches prepare their annual scientific meeting programs which would reflect the thrust of the Competencies Report, it was resolved at the last meeting that a sub-committee of the Board comprising Tim Upsdell and David Caple, with power to co-opt, prepare a list of "topicsî, based on the Units of the competencies project, that could form the basis of a scientific meeting program for the year.

Tim and David reported that they would invite Branch representatives to meet at the coming 1998 Conference with a view to their sharing common ideas and to conjointly attracting prominent speakers for Branch speaking tours.

FINANCIAL SITUATION: Over the last two meetings the Board has considered several suggestions arising from the current financial situation. The Executive agreed to ask the Societyís Auditor to conduct a brief overview of the Societyís financial situation and make recommendations to the next Board meeting about -

- reserves
- capitation
- the management of all accounts
- options for consolidating accounts into a single facility

CONSOLIDA TION OF ACCOUNTS: Directors were of the view that it was appropriate to take the initiative soon consolidate all operative and deposit accounts of the Society into single accounts managed by the Society's Secretariat. It was agreed, however, to await the independent report from the Auditor.

MEMBERSHIP CRITERIA: The Executive was asked by the Board at its last meeting to consider the current criteria in the light of the competencies report and the possible need to upgrade the standards of entry and to bring proposals to the next Board meeting.

The Board decided to recommend to the membership at the next AGM the following changes to Membership entry Criteria and Benefits in accordance with Article 5.1 of the Constitution that "The rules and acceptance procedures to all grades of membership of the Society are determined at an Annual General Meeting of the Society from time to time."

1. the category of CPE be incorporated into the normal categories of membership as a level that requires higher standards of entry and experience than the ordinary member;
2. the criteria and benefits of both CPE and Member categories be changed to reflect increasing standards of entry;
3. Affiliate membership remain in order to attract those from other disciplines (or SIGs) who want a minor involvement without being ergonomists;
4. in the event of these changes being made to the membership entry requirements, a grandfather clause be accepted to allow existing members to retain their current substantive rank, (providing they do not let their membership lapse).

CAREER NIGHTS:

The Board accepted the draft Guidelines proposed by the Victorian branch and resolved to update the material including making it relevant to across Australia before distribution to the Branches.

STRA TEGIC PLAN: It was resolved to -

1. update the current Strategic Plan
2. send a copy to the incoming President for a restructuring that will reflect current priorities
3. list the item for more complete consideration at the next face-to-face meeting.

NEW CPE'S ADMISSION: Applications for admission as a CPE having been received and duly processed by the PAB the following persons were admitted: Roxanne Egeskov; Ann Nugent; Michael McCracken

STOP PRESS - COMPETENCIES REPORT AV AILABLE

Members will be delighted to know that the final and full Competencies Report has been printed and is available.

The Board has decided that all Fellows, Certified Professional Ergonomists and Members who have renewed for 1998-99) are entitled to a free copy on application. For others, Affiliates and non-members, it will cost $30.00.

If you would like a copy (and have paid your 1998-99 subscription which was due July 31), please order it from the Secretariat (phone, fax or e-mail) and allow a couple of weeks.

Your place of employment and your former university library will also want to purchase a copy; tell them.

Ian Mitchell

Ergonomics International

IEA 2000

The 14th IEA Congress, 30 July to 4 August 2000, in San Diego, CA, USA will probably be the largest ergonomics congress ever held. We anticipate 430 technical sessions and 2500 attendees! Paper sessions will be 14 minutes each (including questions); one page proposals are due 25 June 1999. You are also encouraged to organize sessions (5 papers), special symposiums (groups of 2 to 8 sessions), and workshops; proposals are due 16 April 1999. The Congress Proceedings will be available on a CD. Limited hard copies will be available. Plan to bring your family and enjoy Disneyland, Sea World, Hollywood and the other California attractions. The Conference hotel, the Marriot, is on the beach. Mexico is just 30 minutes away. The IEA 2000 web site is www.IEA2000.HFES.org The IEA Secretariat is headed by Lynn Strother, HFES, PO Box 1369, Santa Monica, CA 90406-1369, USA; fax: +1 310 394 2410; Lynn_Strother@compuserve.com

TECHNICAL GROUPS OF HFES

You can join the Human Factors and Ergonomics Society technical groups even though you are not a member of HFES. Annual fees are $5-10, depending on the group. Following is a list of the name of the group, its present membership and contact address.

- Aerospace systems (378) dennis_beringer@mmacmail.jccbi.gov
- Aging (267) fax: +1 650 398 2981
- Cognitive Engineering and Decision Making (505) eduardo_salas@ntsc.navy.mil;www.ie.msstate.edu/cedm_tg/
- Communications (257) cwarton@advtecht.uswest.com;ctg.hfes.org/
- Computer systems (706) rbias@bmc.com
- Consumer products (496) bussi@kodak.com
- Educator's professional (201) sjshapir@indiana.edu; www.indiana.edu/~iuepsyc/HFES/EPG.html
- Environmental design (166) merobin@pacball.com
- Forensics professional (277) hhendrick@aol.com
- Individual differences in performance (151) tirre@alhrm.brooks.af.mil
- Industrial ergonomics (757) stuartbuttle@compuserve.com
- Macroergonomics (323) bkleiner@vt.edu; http://mgdsl.ise.vt.edu/odam/
- Medical systems and rehabilitation (326) psanderson@swin.edu.au;callan1.gtri.gatech.edu/msrtg
- Safety (622) kalshm@rpi.edu; www.telepath.com/purswell/HFES_SFTG/index.htm
- Surface transportation (284) gstewart@ford.com; www.wwnet.com/~gstewart/sttg
- System development (168) Lallende@arl.mil
- Test and evaluation (266) gawron@calspan.com
- Training (332) phil+@osu.edu
- Virtual environments (261) silly@eos.arc.nasa.gov: www.coe.neu/~mourant/vetg.html
- Visual performance (332) joel.warm@uc.edu

WEB SITES OF IEA MEMBERS

Australia	**Ergonomics Society of Australia** www.curtin.edu.au/society/esa/
Austria	**Austrian Ergonomics Association** www.ebweb.tuwien.ac.at/oeae
Canada	**HFAC/ACE** www.hfac-ace.ca
Ireland	**Irish Ergonomic Society** www.UL.ie/~ies/
UK	**Ergonomics Society** www.ergonomics.org.uk/
USA	**Human Factors & Ergonomics Society** www.hfes.vt.edu/hfes/html
Ukraine	**All-Ukranian Ergonomics Association** www.elan-ua.net

The National Safety Council (of USA) draft "Control of Cumulative Trauma Disorders" (Z365) is available for comment. See www.nsc.org/z365.htm for ordering information.

The American Industrial Hygiene Association (AIHA) has published a 1365 page handbook "The Occupational Environment—Its Evaluation and Control", S. Dinardi, Ed., 1997 (ISBN 0-932627-82-X).

1. Introduction and Background (5 chapters)
2. Hazard Recognition and Evaluation (14 chapters)
3. Physical Agents (6 chapters)
4. Human Environment at Work (5 chapters)
5. Controlling the Occupational Environment (6 chapters)
6. Program Management (14 chapters)

At the start of each chapter, there is a list of prerequisite knowledge, "outcome competencies" (what the reader of the chapter should be able to do after reading the chapter), alphabetical list of key words (the key words also are underlined in the text), and topical outline. Thus the reader can see at a glance what the chapter covers. At the end of each chapter, there is a summary and references. At the end of the Handbook there is a 60 page glossary and a 22 page index. Chapters are printed with two columns/page (with a third "column" left blank) and lots of tables and figures so the handbook has a pleasant visual appearance. All this for $150 ($125 for AIHA members); shipping is $15 in USA and $35 outside USA. Credit cards are accepted. Contact AIHA, 2700 Prosperity Avenue, Suite 250, Fairfax VA 22031 USA; infonet@aiha.org

The Health and Safety Executive (HSE) has updated two popular booklets.

Lighting at Work (ISBN 0 7176 1232 5) L 9.25

Seating at Work (ISBN 0 7176 1231 7) L 5.95

Contact HSE Books, PO Box 1999, Sudbury, Suffolk, CO10 6FS, UK; fax: +44 1787 313 995

Every year, the Finnish Institute of Occupational Health publishes, in English, a magazine of articles on ergonomics and occupational health. For a free single copy, contact Work Health Safety, Finnish Institute of Occupational Health, Topeliuksenkatu 41 a A, FIN-00250 Helsinki, FINLAND; tluo@occuphealth.fi

Branch News

WA BRANCH

Annabel Cooper, chair of the WA branch, was recently on TV, being interviewed for a program produced by the School of Isolated and Distance Education. They screen programs for young people in isolated areas who are studying and taking up jobs in the retail and business sectors. The program was entitled "Safe Work Practices". Annabel gave an excellent presentation on ergonomics and how it could be used to provide a safe working environment and assist in preventing injuries. The program also included a practical session so that students could see how to set up a computer workstation, and correct manual handling techniques which they could use in either an office or retail workplace.

The program received lots of positive feedback from the students. It was great to see ergonomics being promoted to the far flung corners of WA! We need more ergonomes on the airwaves!.

Jenni Miller, jennim@cantech.net.au

Most of you will have heard of the sad loss of Kim Gurr. Kim had a large library of books on Ergonomics and related topics which his family have kindly donated to the Ergonomics Societies of India and South East Asia. Dr Leon Straker has arranged the donation which has been financially supported by Curtin University of Technology and the WA Branch of the ESA.

WA Conference News

The WA Conference Committee is up and running for the 1999 ESA Conference to be held in WA. After the fantastic Queensland Conference, we feel a little daunted by the task ahead and would welcome advice and/or moral support from those who have seen the process first hand. We feel we have the right first ingredient - an enthusiastic group of volunteers!

Holidaying in WA?

If you're planning a trip to WA - business, pleasure, whatever - why not contact the WA Branch of the ESA before you leave home.

We invite you to attend one of our Technical meetings, or even better, we could arrange for you to speak at one of our meetings. The contact number for the WA Branch is through the Manual Handling Centre on (08) 9288 9266.

Kerry Jones

NSW NEWS

Greetings everyone! Much activity at individual level in this part of the world but it has been hard to get anyone to sit still long enough to put pen to paper or finger to keyboard to communicate in Ergonomics Australia. This is an attempt to catch up!

SCIENTIFIC MEETINGS TO DA TE

NSW's Scientific & Continuing Education program left the blocks flying in March when we managed to snag Professor Serge Roy to deliver a presentation on "Ergonomic Applications of Surface EMG: State of the Art". Professor Roy is a Research Associate Professor at the Neuromuscular Research Centre at Boston University, and is also a physical therapist and faculty member in the Department of Physical Therapy. He has been in the forefront of R&D in applying surface electromyography to rehabiitation and ergonomics and was in Australia with Professor Roberto Merletti to deliver 2-day EMG workshops in Queensland and NSW.

In a comprehensive coverage of surface EMG techniques for our audience, Serge reviewed the anatomical and physiological bases for EMG signals before presenting detailed examples of the Back Analysis System which has shown a low back pain classification accuracy of 90% (interested readers can find this in J. Rehab. Research and Development, Vol34, No4, 405-414, 1997).

The audience was really on the edge of their seats however (well I was, for one), with Serge's description of the development of surface EMG protocols for conducting analyses of dynamic contractions, such as occur during repetitive cyclic movements. He and his co-workers have been able to derive fatigue-recovery profiles showing muscles fatiguing and recovering within the course of a task, demonstrating the distribution of force production across different muscle groups during such tasks. This work is enabling much greater insight into the fatigue characteristics of our muscular system than that provided by earlier static EMG work which has been much relied upon to date. It has already begun to permit us a more sophisticated understanding of the relationship between work design, muscular fatigue, and overuse, than previously available.

Their work continues in this area towards more accurately defining fatigue characteristics and examining the effects of different loads, different work-rest cycles and ultimately, in applying these techniques to non-repetitive dynamic work! This most rewarding continuing education night finished with examples of muscular fatigue countermeasure development for the NASA space program, and for ergonomic applications in the automotive and space industries.

Other references of interest include:

Kumar, S & Mital, A (Eds 1996) Electromyography in Ergonomics. Taylor & Francis.

Roy, SH et al EMG Assessment of Back Muscle Function During Cyclical Lifting. In Press, J. Electromyography & Kinesiology, June 1998.

Or why not visit Serge Roy and others at their Muscle Fatigue Lab at http://nmrc.bu.edu/mfl/

Max Hely

There was no meeting in April and two ergonomics prize winning students, Sadina Bailey and Hilda Cheng, presented at the May meeting. Sadina Bailey, a rehabilitation consultant with the Commonwealth Rehabilitation Service, graduated at UNSW with a Master of Safety Science degree, majoring in Ergonomics in April 1998. She met all the requirements for a MAppSc(Ergonomics)and completed her major research project by evaluating the potential for Speech Recognition Technology (SRT) to be a rehabilitation strategy for word processor operators suffering from occupational overuse syndrome. Her presentation to the NSW Branch of ESA reported the findings of her study.

Speech Recognition Technology (SRT) is gaining in popularity - is it effective? Sadina evaluated SRT for word processing in terms of productivity, level of acceptance, and cost. Word processor subjects with no physical impairment were required to reproduce a standardised passage of text using both SRT and normal keyboard and mouse. It was found that SRT attained a similar level of performance (speed and accuracy) to the keyboard input and that subjects accepted, and would be willing to use SRT in the workplace. Also an examination of the cost of purchasing and implementing SRT would be less than the current costs of rehabilitation. Therefore it was concluded that SRT indeed had the potential to be a cost effective rehabilitation strategy for word processor operators suffering from OOS - it reduced the need for repetitive keying and the amount of lost time after an "injury".

Hilda Cheng completed the requirements for Bachelor of Industrial Design in 1997 and is now working in Singapore. She received the Fay Adams Ergonomics in Design Prize in 1997. Hilda presented her major project from her final year of UNSW Bachelor of Industrial Design program. Her work looked at the difficulties faced by people working in 'home nursing'. She identified leg handling as a particular problem area that is causing discomfort and injury among community nursing staff and other home carers. Hilda presented "Angel", a folding stool that can support three ways of sitting/kneeling and help carers to maintain appropriate postures during a range of leg handling tasks.

The design of "Angel clearly required the elegant resolution of many competing/conflicting requirements. Hilda presented the main results of her detailed assessment of these requirements and of the testing of mock-ups that she carried out. An exquisite full size model of the design was unveiled. (see photo below)

Hilda Cheng's folding stool "Angel".

Roger Hall and Jonathan Talbot

The proposed June presentation had to be postponed as Nick Coleman was geographically unavailabe and will be given instead on August 5 at the Worksafe Auditorium. Nick graduated from Loughborough University in England with BSc(Hons) in Ergonomics and Human Factors. He has worked as a Human Factors consultant and as an ergonomist for various organisations including Worksafe Australia. For the past 2 years he has been the sole human factors crusader at Canon, designing software to support Canon's digital imaging businesses. Nick will talk about "useability engineering" and give his perspective on the role of ergonomics/ human factors in the software development industry.

In July, David Gosling and Christine Aicken gave a presentation on "Macro Ergonomics and Management Systems". David is an ergonomist at Telstra Corporation - Business and International; Christine is an OHS ergonomics consultant who specialises in management systems consultancy. They propose Health and Safety management systems are, through their systematic and planned approach to management of H&S risks, considered to be a key driver of improved H&S performance, (Gallagher,1997) and necessary for best practice management (Australian Industry Commission, 1995).

This joint presentation examined the relationship between quality and safety management, including aspects of the design, implementation and integration of H&S Management Systems in large organisations. The experience of a business unit, within a telecommunications organisation was used to highlight some of the challenges in the development of a 'safe system of work' approach to H&S management that is integrated into the business, and is based upon continuous improvement.

SEPTEMBER WORKSHOP

On Monday 14 September 1998 the Branch is conducting a one-day workshop at the Masonic Centre, Castlereagh Street, Sydney, on Handling People. This will be back-to-back with the WorkCover 2-day Conference on Manual Handling on 15 & 16 September. While the Conference will focus on policy matters, the ESA workshop will be concerned with the practical issues of physically handling clients and include a review of available research material; products such as lifting aids; a case study on lifting techniques; accomodating the movement of people with various disabilities; discussion of the no-lifting policy; handling aggression from clients or relatives; and finally a moot court to demonstrate a courtroom trial. This workshop will be limited to 120 people and it is hoped to attract people from a wide range of disciplines and to use this as a vehicle for promoting the value of ergonomics and thus attracting new members.

NSW ERGONOMICS PRIZES

The Ergonomics Society of Australia (NSW) Prize

For the best overall performance in all prescribed Core subjects by all students who have completed the requirements to graduate with the award of either the Master of Applied Science (Ergonomics) or the Graduate Diploma in Ergonomics: Peter Lawry.lawry.

Peter Lawry (left) receiving his prize from Max Hely

The MMI Insurance Prize for Principles of Ergonomics

For the best performance in SESC9224 Principles of Ergonomics by a student enrolled in a Diploma or Coursework Masters degree course in the Department of Safety Science: Peter Lawry.

The Neil Adams Ergonomics Prize

For the best overall performance in three subjects, one of which is an ergonomics subject, by a student enrolled in the Graduate Diploma in Ergonomics: Peter Lawry.

The Fay Adams Ergonomics in Design Prize: Hilda Cheng (see item above)

COMINGS AND GOINGS

Only one item to hand: Donna Lee has moved from Workcover where she was an ergonomist on the BackWatch program, to a position as ergonomist at Australia Post.

WORKSAFE AUSTRALIA

Many ergonomists will be aware of the changes that occurred to the National Occupational Health and Safety Commission (NOHSC), Worksafe Australia, during 1996 with the downsizing of the organisation, including the dismantling of the Ergonomics Unit.

The purpose of NOHSC is to lead and co-ordinate national efforts to prevent or reduce the incidence and severity of occupational injury and disease by providing healthy and safe work environments.

As follows is an outline of NOHSC's framework for operation:

NOHSC's objectives include:

- the development of community awareness and facilitation of public debate on OHS;
- the provision of a tripartite national forum to develop polices and strategies on OHS; and
- the achievement of a national focus for OHS matters.

NOHSC's strategic approach includes:

- facilitating through strategic alliances the implementation of better approaches to achieving improved OHS outcomes;
- supporting and adding value to efforts in all jurisdictions to tailor approaches to OHS improvement;
- to ensure standards and codes are developed only when there is a demonstrated need, and they further the goals of simplicity and clarity in regulation; and
- integrating the needs of small business into its work.

To support its objectives, NOHSC had developed for major Program areas and two supporting Program areas. The major Program areas are:

1. identifying nationally significant developing and emerging OHS problems.
2. finding practical solutions for workplaces.
3. facilitating improved prevention performance.
4. measuring prevention outcomes in the jurisdictions.

These four Program areas are interactive, with the outcomes of each area informing work in the others. The Program planning and activity cycle enables measurement and continuous improvement of Australia's OHS performance.

The supporting Program areas include:

5. providing an effective national forum.
6. improving organisational infrastructure and measuring corporate performance.

Three branches perform the work of NOHSC:

- the Prevention Strategies and Facilitation Branch;
- the National Forum and Information Branch; and
- the Performance Measurement Branch.

The work of each branch is linked to one or more of the Program areas:

The Prevention Strategies and Facilitation Branch has primary carriage of projects in Program areas 1 and 2, and some activities in Program area 3 (regulatory solutions and small business); The National Forum and

Information Branch has primary carriage of projects in Program areas 5 and 6, and some activities in Program area 3 (information exchange); and

The Performance Measurement Branch has primary carriage of projects in Program area 4, but also contributes significantly to Program area 1.

Some examples of NOHSC work relating to this framework include:

- a sound early warning system on nationally significant emerging problems.
- completion of a research report on whole body vibration in mining vehicles.
- completion of an evaluation of the impact of targeted interventions on OHS behaviours of small business building industry owners, managers and contractors.
- generation and spreading workplace solutions as fast as possible across the country.
- national solutions projects: the Queensland construction safety 2000 initiative.
- road transport OHS initiatives.
- OHS management audit systems.
- contractor OHS compliance initiatives.
- OHS enforcement strategies – efficacy of on-the-spot fines.
- publication of an overview report regarding traumatic work-related fatalities (1989-1992).
- publication of annual workers' compensation statistics.
- maintenance if the mesothelioma register and publication of its annual report.
- Supporting the LMC's comparative performance measurement (CPM) project, with NOHSC upgrading the National Data Set to meet CPM needs and undertaking complementary projects.

To obtain further information regarding NOHSC or one of NOHSC's projects contact:

Freecall: 1800 252 226 (outside Sydney)
Direct: (02) 9577 9555 Fax: (02) 9577 9202
Internet: http://www.worksafe.gov.au

Shann Gibbs (shanng@gibbsplus.com.au)

Ergonomics, geysers and mudpools.

Verna Blewett

An invitation to attend the recent meeting of the New Zealand Ergonomics Society could not be passed up. About 70 people (including 5 from overseas) braved the chill and geo-thermal smells of Rotorua on 14-15 May 1998 to talk about ergonomics Toward the Millenium. This represents about half the NZES membership – what a great turnout! The conference topic aroused plenty of useful discussion about where the discipline is heading and this punctuated the more traditional topics that were presented. The standard of papers and presentations was high and the content demonstrated the diversity of ergonomics.

You'd have to go far to beat the Forestry contingent who introduced us to some startling facts about their industry peppered with video, overheads, slides, power point slides as well as examples of equipment (thank goodness the chainsaw wouldn't start) and trucks (in miniature). The hazardous nature of this industry is increased by high production targets, the macho culture and the extreme physical environment. Try planting trees on 50˚ slopes for a living! Ergonomists in the industry work side-by-side with the forestry workers and have earned considerable respect. Their work ranges from awareness programs about fatigue and diet to physical assessment of strain from various intensive tasks, and from the design of forestry harvesting machines to new methods of calculating work targets with ergonomic principles. All good stuff – high impact on the workers but apparently somewhat less impact on work design which is under the control of highly competitive managements.

Those of you who have driven on NZ roads will be pleased to know that the kiwis have some novel ideas about how drivers might learn to drive more safely. Other transportation papers were about conspicuousness and legibility of licence plates in Singapore, the way drivers assess road characteristics, and factors influencing milk tanker crashes. In the air, issues about airport congestion, reporting aviation safety issues and the ergonomics of two training helicopters were discussed.

It was great to meet Professor Moh Ayoub (Texas Tech University) again, he presented a keynote paper on the future of MMH research in which he called for improvements in research through the use of multiple methods and epidemiology. His stance was supported strongly by Professor Shrawan Kumar (University of Alberta, Canada) who sees the lack of 'hard' data as a significant threat to the future of ergonomics. He presented a summary of his work on trunk rotation and showed slides of the awesome piece of testing equipment that he invented.

There was another Ozzie at the conference, a young industrial designer, from Canberra, who is not (yet) a member of ESA. She presented a splendid paper on using user input in developing design criteria for a medical examination couch. My own paper, on Working to improve organisations, was well received and sparked lively discussion and post-paper chats.

Like us, our trans-Tasman colleagues are examining their professional and corporate navels. Dr Carol Slappendel opened the discussion in her keynote address, naming some of the threats to ergonomics embodied in attacks the literature about the veracity of the discipline. She concluded that the NZ Society has done well to adopt our jointly determined competencies as these can be expected to become an important foundation for their work. She warned that it is necessary to be vigilant about the aims of their Society, to be outward looking to promote ergonomics in the community, and to improve the rigour of ergonomics research; advice we in Australia would do well to take on board.

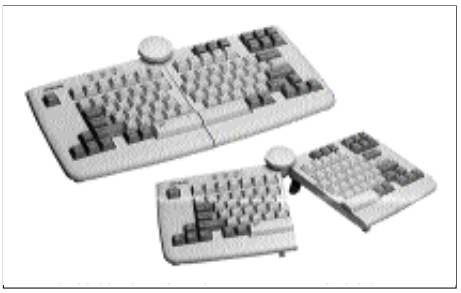
A post-conference tour to the Waratahs vs Chiefs Rugby match was a new experience and one I'll long remember (although I'm too polite to mention the result) and a couple of days wandering around magnificent Auckland made my feet itchy to return.

Living in such a beautiful environment must be good for the soul. All the Kiwis I met were wonderfully welcoming and warm and I can strongly recommend time in that lovely place. If you need the excuse of a Conference to take you there, then you couldn't go past an NZES meeting for high quality content, great

networking and a solid social program (try a meeting while taking the waters in the spa early in the morning following the conference dinner). The destination for the 1999 conference is still to be determined – watch out for it!

Erratum

An error occurred in the June issue. Keen observers will have noted that the illustration of the Lexmark Select-Ease keyboard (Gold Touch Technologies) on page 19 was incorrect. The correct illustration is reproduced below.



AN INVESTIGATION OF LOADMASTER POSTURE IN THE S-70A-9 BLACK HAWK HELICOPTER: WORK IN PROGRESS

Peter Blanchonette, Robert King, David Foran and Peter Simpson Air Operations Division, Aeronautical and Maritime Research Laboratory 506 Lorimer Street Fishermens Bend VIC 3207 Australia

The Sikorsky S-70A-9 Black Hawk helicopter provides the Australian Army with a battlefield utility helicopter capability which is in high demand for operational use. The Black Hawk has been in service for ten years and the Australian Army has 35 aircraft. The Black Hawk is operated by a crew of four, consisting of two pilots and two loadmasters. The pilots occupy the front seats in the cabin and face forward while the loadmasters occupy seats situated directly behind the pilots and face outward.

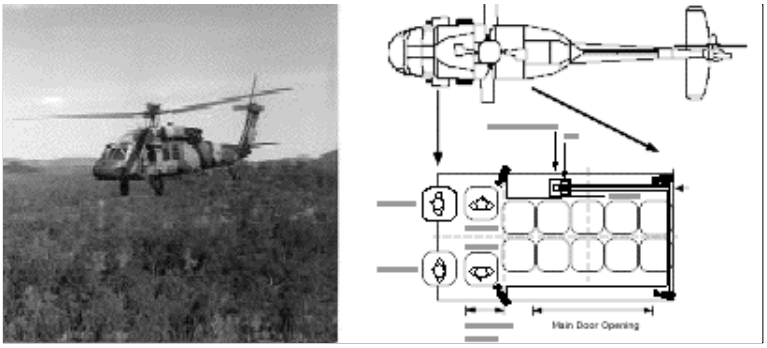


Figure 1. Seating detail in the Black Hawk helicopter.

The musculoskeletal problems experienced by military helicopter pilots have been reported in the literature since the late 1960s. The typical posture that a pilot assumes in order to control the aircraft (leaning forward, resting or bracing right arm on right knee to control cyclic with left arm extended to control collective) is well documented and has become known as the 'helicopter hunch'. The incidence of lower back pain in helicopter pilots is high (up to 95%), with the pain lasting for up to 48 hours after the flight (Bowden, 1987). Long-term exposure results in chronic ache in the lumbar area with episodes of acute pain and spasm also occurring in around fifty per cent of cases (Delahaye, Auffret, Metges, Poirier and Vettes, 1982).

However, while the incidence and aetiology of musculoskeletal pain in military helicopter pilots has been the subject of research for several decades, the (possibly more severe) problems of non-piloting aircrew have been largely ignored. Recent research suggests that non-pilot helicopter aircrew have more than three times the risk of developing back problems than pilots (Simon-Arndt, Yuan and Hourani, 1997).

Black Hawk loadmasters are often required to adopt extreme working postures (compared to pilots) in order to fulfil functions critical for mission safety and success. Musculoskeletal problems are emerging in the loadmaster population, putting at risk these aircrew who represent a substantial capital investment in terms of training. The Australian Army is very conscious of its 'duty of care' and wishes to ensure that Black Hawk loadmasters do not suffer chronic disability as a result of their work environment.

Air Operations Division of DSTO was asked to investigate the impact of workstation design and job requirements on loadmaster health and the operational effectiveness of the whole airborne system. This paper describes the approach we have taken in an attempt to identify, classify, analyse and resolve loadmaster postural problems and reports some preliminary results of work to date.

METHODS AND PRELIMINARY RESULTS

MUSCULOSKELETAL PAIN AND DISCOMFORT SURVEY

Initially, a survey of musculoskeletal pain and discomfort was designed and administered to thirty pilots and thirty loadmasters operating the Black Hawk helicopter (Foran and Zalevski, 1998). The survey sought to determine and compare the incidence, aetiology and impact of pain and discomfort experienced by pilots and loadmasters. Results show that higher levels of pain were reported in more areas by loadmasters (neck, lower back and knees) compared to pilots (neck and lower back). All aircrew considered workplace design and

work-related activities to be the primary causes of the reported pain. Pilots considered their symptoms to have a negligible effect on job performance, whilst loadmasters reported that certain symptoms interfered significantly with work activities. Overall, the results of the survey confirm that loadmasters in the Black Hawk seem to be at even greater risk than pilots in terms of developing musculoskeletal disorders.

IDENTIFICATION OF AIRCREW TASKS AND LOADMASTER POSTURES

The loadmaster problem is being approached from what human factors practitioners describe as a 'systems' paradigm. Essential to this approach is the understanding that loadmaster problems cannot be addressed and resolved in isolation from the rest of the man-machine system. Modifying loadmaster posture to make it more ergonomically acceptable, for example, could affect the loadmasters' ability to carry out tasks essential for mission safety and success (such as the continual surveillance of a section of surrounding airspace). Thus, all tasks essential to mission safety and success need to be identified, and any resolution of loadmaster postural problems must ensure that all essential tasks are retained somewhere within the system.

Video recording and analysis techniques are being used to identify all aircrew tasks and loadmaster postures. An equipment fit has been developed to provide a record of aircrew activity and communications in operational circumstances. The equipment fit involves mounting four miniature video cameras inside the aircraft (one for each crew member) and routing their outputs through a video multiplexor which allows the four video outputs to be recorded on one video recorder. Verbal communications are recorded directly onto the recorder's audio track. This system provides a time synchronised record of aircrew activity and communications. A diagrammatic representation of the data collection system is also shown in Figure 1. Representative data are currently being gathered during operational exercises.

Preliminary data are being encoded and analysed with the assistance of MacSHAPA (Sanderson, James and Seidler, 1989), an interactive software package which helps build, manage and analyse the task and postural database. MacSHAPA aids complex analysis of the data. For example, the database can be queried to reveal how long loadmasters spend in each posture, and the time series aspects of postural change. Analysis will reveal whether any particular task is associated with a given posture, and what tasks other crew members are performing at those times.

Analysis of the limited data presently available shows that loadmasters assume a restricted range of postures. These postures are common across loadmasters and consist of sitting upright, sitting forward, kneeling, standing (inside aircraft) and standing torso bent (head out of loadmaster window). The postures are essentially static, being held for up to five minutes. Tasks associated with these postures include pre- and post-flight checks, provision of clearance information, surveillance, hooking, hoisting, troop management and gunnery.

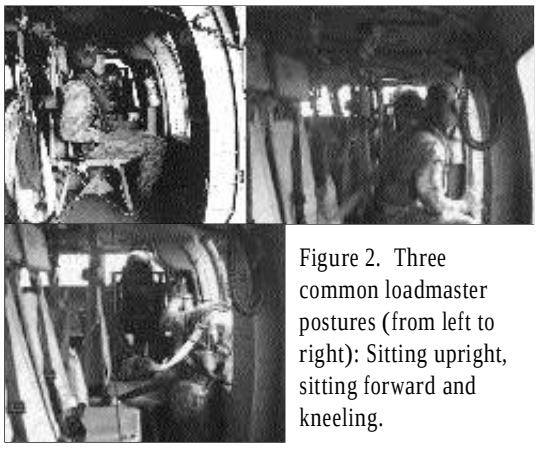


Figure 2. Three common loadmaster postures (from left to right): Sitting upright, sitting forward and kneeling.

Figure 3 is a timeline from a typical Black Hawk mission. The timeline indicates the postures assumed by the right hand loadmaster, and provides a graphical representation of the duration and frequency of postural change. It is apparent that a kneeling posture was the most prevalent posture, occupying approximately 39%

(49 min 37 s) of the total recorded mission time. The next most common posture was sitting forward, which was maintained for approximately 24% (31 min 20 s) of total mission time. The only other posture to account for a large proportion of mission time was sitting upright, which occupied approximately 17% (21 min 21 s) of the loadmaster's time. In this particular mission, the loadmaster spent a considerable amount of time (13%, 17 min) outside the aircraft, loading and unloading troops and their equipment. Any postures other than those noted, represented only minor contributions, collectively summing to around 5% (6 min 24 s) of the mission time.

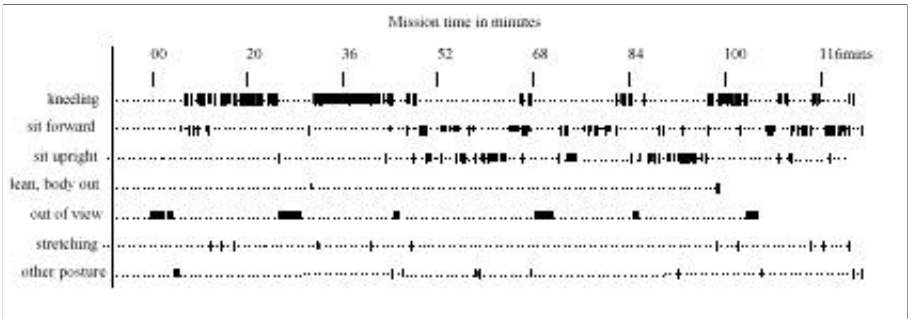


Figure 3. Timeline for a typical Black Hawk mission

In terms of the loadmaster's tasks, 76% of the time kneeling (37 min 43 s) was spent on surveillance tasks (which involve scanning the surrounding airspace and area for obstacles). The remainder of the time kneeling (24%, 11 min 54 s) was spent providing clearance information (which involved verbally passing information regarding the clearance of objects such as trees, rocks, other Black Hawks etc., near the aircraft when travelling/landing in confined areas). The majority of the time sitting forward (81%) and sitting upright (81%) was spent on the surveillance task (42 min 01s of total mission time). As stated, approximately 13% of the mission time was spent outside the aircraft performing troop management duties.

BIOMECHANICAL ANAL YSIS

The observed postures were classified using the Ovako Working Posture Analysis System (OWAS - Karhu, Kansi and Kuorinka, 1977; Karhu, Harkonen, Sorvali and Vepsalainen, 1981). This analysis revealed that loadmaster's kneeling posture is classified in action category four, one requiring immediate remedial action.

One of the aims of this work is to further quantify the biomechanical stresses the loadmaster experiences. However, biomechanical models such as the University of Michigan static model (University of Michigan, 1977 have been designed to model lower back moments during "traditional" lifting tasks, and were never intended to model the loadmaster's more convoluted postures. Given the inadequacies of the current generation of models in this respect, the moments about all relevant joints in common loadmaster postures will be calculated using kinetic and EMG measurement techniques while subjects assume the observed postures. Modified postures will be re-evaluated using the OWAS, kinetic and EMG measurements.

RESOLUTION OF LOADMASTER POSTURAL PROBLEMS

The most complete and appropriate solutions to postural problems in the workplace often involve some redesign of that workplace. Unfortunately, within the military aviation environment, the cost and time associated with aircraft modification is enormous. Any redesign of the loadmasters' workstation could take years to be approved and implemented, if it could be achieved before expiration of the aircraft's service life. For these reasons our efforts to resolve loadmaster postural problems will

initially concentrate on other solutions within the systems context, such as the reassignment or modification of loadmaster tasks associated with harmful postures.

CONCLUDING REMARKS

In this paper we have discussed ergonomic issues associated with helicopter aircrew. While previous studies have surveyed aircrew (mainly pilots) and determined that musculoskeletal pain is a significant issue the (more severe) problems of non-piloting aircrew such as loadmasters have been largely ignored. The aim of this study is to identify loadmaster tasks and associated postures and quantify the forces acting on the loadmaster's body. Recommendations will be made within a systems paradigm in order to reduce the risk of loadmasters developing chronic long-term muculoskeletal pain.

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Syringe Filling

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During an ergonomic assessment of the hospital pharmacy concern was expressed about technicians performing the IV prescription filling process. The technician's performed repetitive syringe actuation tasks, manually filling and emptying 20cc, 30cc, 60cc syringes. The tasks required sufficient manual force to visibly stress the wrist and thumb. An evaluation of employee occupational medical records revealed a high incidence of cumulative trauma disorders (CTD) in the wrist/hands of pharmacy technicians.

IDENTIFICA TION OF ERGONOMIC PROBLEMS IN THE PHARMACY

The task analysis of the IV filling process began with interviewing the supervisors and leads in the pharmacy. Expectations were reviewed with them, and the goal was established to evaluate their current process to identify and reduce physical stressors.

Information concerning prior occupational injury/illness attributed to the IV fill process was reviewed. The description of the task's content and work organization was discussed with different workers who performed the task. Recent changes made in the task, and the normal amount of time spent performing those tasks during the day were noted. When asked whether there was a work rotation system in place, it was stated that rotation becomes a management problem when considering the limited, available workforce with the skill, knowledge and experience required of technicians performing these perscription combination tasks. A cycle can develop where a shortage of IV technicians (due to CTD restrictions and normal leave, and increased hospital populations) places additional repetitive workload upon the available workforce.

First hand observation and video tape review resulted in defining the primary ergonomic problem in the syringe fill process as a repetitive pinch grip required to hold the syringe, view the measurement graduation markings, articulate both the syringe and vile to maintain coverage of the needle tip, and at the same time forcefully pull or push the plunger actuator to fill or expell liquid drug solutions.

The repetitive, forcefully applied pinch grip is notorious for stressing both muscle and connective tissue of the hand and arm. Repetitive use of the pinch grasp creates friction on the two tendons that control the thumb. Since the two thumb tendons needed to maintain the pinch grip share a common sheath, tension levels are elevated. The IV technicians tendons are further stressed because the task requires pinching in combination with wrist flexion.

A push/pull force gauge was used to measure the thumb and finger force requirements to both fill and expel liquid from a 60cc and 30cc syringe. Forces ranging from 6 to 8 foot pounds were required to fill and expel room temperature, water like liquids with the syringes. The forceful exertions lasted four to eight seconds per repetition depending upon the size of the syringe and the density of the liquid being handled.

Additional analyses were made of the muscle and connective tissue stress by using the Ariel Biomechanical Assessment System. A licensed physical therapist with expertise in applying the Ariel system for biomechanical analyses concluded that there was a high potential for CTD when IV techs repetitively perform a syringe fill process.

It was determined that the following ergonomic factors would impact user acceptance and performance of the syringe system:

The human bio-mechanical exertion required to fill syringes with medication in a hospital pharmacy environment places excessive stress upon the wrist and upper extremities. The pinching grasp required to hold syringes, when combining with the pulling and pushing of the plunger apparatus places a heavy stress upon the fingers and wrist. The increasing number of syringes that are filled by qualified pharmacy technicians has led to more cumulative trauma disorder (CTD).

The work force of the pharmacy is unique in that it requires a high degree of specialization and certification for technicians who will combine drug elements to be used with hospital patients. Increased patient populations require increased task repetition for IV technicians. Their emotional stress factors are high due to the fact thet errors in the pharmacy can have serious life threatening consequences for patients. These two factors, stress and repetition, often contribute to worker CTD.

The 20cc, 30cc, and 60cc syringes are difficult for workers to fill because of the great amount of resistance created by the plunger, especially when filling the syringe with dense, cool liquid solution. Elevating the syringe to allow the extraction of medication from a vial, while manipulating the plunger with the other hand, places the workers wrist at a greater risk of developing CTD. Repetitive stress, when combined with constrained wrist posture is an invitation to occupational illness.

PRIOR ATTEMPTS TO SOLVE THE PROBLEM

Few devices exist that assist in both filling and emptying syringes. These systems have high operating costs and can involve lengthy set up times. Each of the predicate devices examined were designed as precision measuring systems. This is particularly useful for vaccines and medications (such as Insulin) which are on standby for regular day-to-day hospital use. Unfortunately these machines do not meet one of the most important needs of today's complex hospitals, which is the measuring of dedications of varying dosage for unique patient requirements. Typically these are combinations of drugs which are manually measured in syringes and dispensed into intravenous bags that are administered to the patient at bedside. The hospital's increased patient population requires more syringes and more trained technicians to perform syringe filling tasks. The manual task, posture and repetitive motion causes excessive upper extremity bio-mechanical stress for the technician. It is exactly for this application that the syringe filling machine is intended.

THE SOLUTION TO THE PROBLEM

The problem can be reduced by using a mechanical syringe filling device which rests in the palm of the hand. When in use, the unit is held in a power grip configuration which provides both good balance and maneuverability while maintaining a neutral wrist position. Syringes can be easily attached to and removed from the top of the unit. Each syringe simply snaps into place. The syringe filling machine operates on air pressure provided by a remotely located air compressor or compressed air tank. The compressed air is delivered to a foot controlled actuator unit through a supply hose. The foot controlled actuator, which contains two valves and an air regulator, is used to direct the air to either side of the dual acting air cylinder actuator. The air is delivered to the unit through a pair of hoses that are clearly labeled and of different length to prevent mislocating the correct air pressure flow. The air cylinder actuator is connected to the syringe through the sliding sleeve and the syringe gripper. Quick disconnects are provided near the unit to facilitate connecting other units of various sizes.

OPERATION

The technician snaps the syringe onto the top of the syringe filling machine and connects the needle to a medication vial, and intravenous bag or a glass/plastic container with a soft top. By operating the foot actuator the syringe plunger will move either forward or backward to fill or discharge the contents.

IMPROVEMENTS

The evaluation studies pointed out that several ergonomic factors would improve the operator acceptance and the overall performance of a syringe filling system. The primary ergonomic concerns in the syringe filling process were defined as follows:

1. The repetitive pinch grip required for holding the syringe
2. The ability to view the measurement graduation markings
3. Articulating the syringe and vial to keep the tip of the needle covered.
4. Providing the manual force required to repetitively pull and push the plunger.
5. The static muscle flexion required to keep the system in the clean air flow envelope provided within the hood.

The prototype maintains a neutral wrist posture during operation and allows the user to grasp the unit with a power grip rather than a pinch grip for 75% of the process. Visual access to the graduation markings on the barrel of the syringe is optimized by allowing the syringe to be rotated 360 degrees along its horizontal axis within the holding supports without removing and reinserting.

This allows the operator to choose how to view the graduations and optimally accommodates both right and left handed technicians.

The manual force required to fill and dispense medications from the syringe has been eliminated entirely with the syringe filling machine. The use of the foot actuation system to control plunger stroke movement allows the operator to have free use of both hands to adjust the medication vile and focus on maintaining the proper coverage of the needle tip.

The original demonstration syringe machines were powered by a compressor which cycled occasionally producing a moderate yet sudden increase in the ambient noise level.

The current syringe filling machine design offers the advantage that it is virtually free of noise. the compressed air is supplied from a high pressure tank which is regulated to provide the machine with the proper pressure. Only the whisper of the exhaust side of the foot operated valves can be detected. The valve noise is below the threshold of the noise associated with the IV hood.

One additional injury common to the manual syringe fill process is that which occurs to the operators fingers when the syringe cylinder is “thumped” to purge the bubbles created when medication is drawn into it. Operators have complained of loss of feeling and numbness in the fingers due to this prolonged “thumping” practice. The new design allows operators to tap the base of the slider mechanism on the work surface to remove bubbles. This method has been demonstrated successfully and is part of the procedures now being used during evaluation.

CONCLUSIONS

This device will eliminate the wrist deviation and the force required while performing manual filling and emptying operations. The syringe machine will eliminate the repetitive motion injuries which are now common in hospital pharmacy’s. Additionally, rehabilitation technicians will be able to resume the syringe filling work assignments they were trained for, and previously could not resume, due to their injuries.

The human bio-mechanical exertion required to fill syringes with medication in a hospital pharmacy environment places excessive stress upon the wrist and upper extremities. The pinching grasp required to hold syringes, when combining with the pulling and pushing of the plunger apparatus places a heavy stress upon the fingers and wrist. The stressful manual task, posture and repetitive motion causes excessive upper extremity bio-mechanical stress for the technician. The increasing number of syringes that are filled by qualified pharmacy technicians has led to more cumulative trauma disorder (CTD). The hospital’s increased patient population requires more syringes and more trained technicians to perform syringe filling tasks.

Conference Calender

NEW MAILBASE

A new mailbase list has been set up, called ergonomics-teachers, to allow discussion between all those involved partly or wholly in the education or training of ergonomists, hci experts, cognitive engineers, human factors experts and similar, at any level of education (school, undergraduate, postgraduate or continuing professional), or in the provision of short training to other professionals in ergonomics related subjects.

This list is closed, ie the archives are not viewable on the Web and membership is selective. You can request to join by sending a message to: ergonomics-teachers-request@mailbase.ac.uk

Please indicate in your message your educational role and how you believe it qualifies you to join this list.

Hope we can get this list successfully launched!

Rachel Benedyk
List Owner
r.benedyk@ucl.ac.uk

AUSTRALIAN OCCUPATIONAL HEALTH & SAFETY TRUST 1999 GRANTS

Grants will be awarded for projects involving the development of occupational health & safety eductaional / traininig material or for personal education. Contact The Australian Occupational Health & Safety trust, PO Box R804, Sydney, NSW 2000. Ph. (02) 9220 6374. Applications close September 30, 1998.

1998

September, 9-11 Global Ergonomics Conference, Cape Town, South Africe. Information from Bob Bridger UCT Medical School, Observatory 7925, South Africa; fx +27 21 4486263. email: deborah@medicine.uct.ac.za.

September 15-18th, IFPS'98 International Fall Protection Symposium, Wuppertal, Germany. Abstracts due August 1, 1997. Contact Roger Kahler, The InterSafe Group, PO Box 7338, East Brisbane, 4169. Ph. (07) 3895 8111; Fx. (07) 3895 8222.

1998 ESA ANNUAL CONFERENCE Melbourne, 5th-7th October. For more information contact ESA National Conference Secretariat, Conference Plus, Level 10, 459 Lt Collins St., Melbourne, Australia 3000. Ph. +61 3 9602 3073; Fx +61 3 9642 5152 or email esa@ozemail.com.au.

October 18-22, The Human Factors Association of Canada (HFAC) 30th

Annual Conference in Mississauga, Ontario
Tel: (905)567-7193x: (905)567-7191
email: hfac-ace@sympatico.ca

November 22-26. Noise Effects 98, 7th International Congress on Noise as a Public Health Problem. Sydney, Australia. Contact (02) 9262 2277; fax (02) 9262 3135; email noise98@tourhosts.com.au; http://www.acay.com.au/~dstuckey/noise-effects98

November 29- December 3. OZCHI '98. Adelaide. http://www.cis.unisa.edu.au/events/ozchi98/

1999

March 11-13. Work, Stress and Health 99: Organization of Work in a Global

Economy. Baltimore Md, USA. contact: wbaker@apa.org; http://www.apa.org/ou/niosh/html

May 12-15, 9th European Congress on Work and Organizational Psychology, Espoo-Helsinki, FINLAND. Contact Sanna-Leena Savola, FIOH, Topeliuksenkatu 41 a A, FIN-00250, sasa@occuphealth.fi

May 19-21 4th Int. Computer-Aided Ergonomics and Safety Conference, Barcelona SPAIN. Contact Markku Leppanen, PO Box 541, FIN-33101 Tampere FINLAND; mleppane@cc.tut.fi; http://www.caes99.org

June 6-9 14th annual Int. Occupational Ergonomics and Safety conference, Orlando, FL, USA. Contact Prof. Gene Lee, Dept. of Ind. Engineering, Univ. of Central Florida, Orlando, FL 32816; GLEE@mail.ucf.edu

June 16-19 European Conference on Transport Psychology, Angers, FRANCE. Contact Secretariat AEPSAT, BP808, Place Andre Leroy 49008 Angers Cedex 01 FRANCE; europsyt@uco.fr; www.inrets.fr

August 8-13. International Society of Biomechanics Congress. Calgary, Canada. Contact: Ph. +1 403 220 6229, Fax +1 403 284 4184, email: mastroh@acs.ucalgary.ca, http://www.kin.ucalgary.ca/isb99

September 15-17, European Symposium on Safety in the Modern Society Helsinki FINLAND. Contact Ms Kristiina Kulha, FIOH, Topeliuksenkatu 41 a A, FIN-00250, Helsinki FINLAND; Kristiina.Kulha@occuphealth.fi

2000

IEA 2000 29 July-4 August 2000 in San Diego, California, USA. Contact IEA/HFES 2000, HFES, PO Box 1369, Santa Monica, CA 90406-1369, USA; Email: HFES@compuserve.com

27 August - 1 September 26th ICOH International Conference, Singapore.Contact Secretaria ICOH2000, c/o Dept of Community, Occupational and Family medicine Faculty of Medicine MD3, Lower Kent Ridge Road, Singapore 119260.

Information to Contributors

SUBMISSION DEADLINES

The deadline for each issue is the 15th of the previous month, that is the deadline for the October issue is **September 15**, the deadline for the December issue is November 15, and so on. All submissions must be by email. Submissions may be made for later issues by fax or mail, but if you have items of an urgent nature and no easy access to email, please mail a floppy disc with the information to Margot Lynch at the Federal Secretariat, The Ergonomics Society of Austrlia Inc., Canberra Business Centre, Bradfield St., Downer ACT; Ph. 02 6242 1951; Fx 02 6241 2554; email: esa@ozemail.com.au

CONTRIBUTIONS

Contributions to Ergonomics Australia are always welcomed and encouraged.

The activities, achievements, experiences, views and opinions of Members are always of interest.

These can take the form of letters, notices, notes, commentaries and articles.

Graphics (photos, illustrations, drawings, computer graphics etc) are particularly welcome and should be camera ready. Photos need not be black and white and negatives are not required.

The preferable form of submission is via email, either in the body of a message, or as an attachment. Files may also be mailed on floppy, (or Zip disc if very large). Virtually any format of files can be accomodated. Otherwise contributions should be printed in a large (14 pt preferred) non-serif font (such as Helvetica) and faxed to 07 3365 6877. Printed pages of similar specification may also be sent by post. Handwritten submissions will only be accepted in exceptional circumstances.

Any enquires about contributions should be directed in the first instance to the Editor.

Information to Advertisers

ENQUIRES

All advertising enquires should be directed to the Federal Office of the Society.

Contact:
Ms Margot Lynch
tel: 02 6242 1951
fax: 02 6241 2554
email: esa@ozemail.com.au

9am - 1pm Monday to Thursday

SIZE

The finished page size of the Newsletter is B5 (250 x 176mm)
Printed column sizes are 210 x 152mm (double) or 210 x 72mm (single).

ADVER TISING COPY

Must be camera ready and must arrive at the ESA Federal Office by the Copy Deadline Submission Date for the Edition(s) in question.

A professional advertising design service is available for producing camera ready copy if required. For further enquires regarding this service contact:

Mr Goro Jankulovski, Perception Commuications
tel: 03 9593 9993 mobile: 0412 604 414
email: percep@ozonline.com.au

RA TES FOR ADVERTISING (SUBJECT TO CHANGE IN 1998)

	Full page	1/2 page	1/4 page	1/8 page
Single issue	$300	150	75	38
2 issues	270	135	68	34
3 issues	240	120	60	30
4 or more	210	105	53	27

ENCLOSURES

Pre-printed enclosures (leaflets, brochures etc) are welcome for inclusion with the Journal.

Enclosures should be pre-folded to fit inside the finished Journal.

Rates for enclosures (subject to change in 1997)

Enclosure not requiring folding	$375
Enclosure requiring folding	$420

These rates may increase if the enclosure weighs more than the equivalent of 2 standard weight A4 pages.

650 copies should be sent to arrive at the ESA Federal Office by the Copy Deadline Submission Date for the Edition in question.

ADDRESS FOR MAILING COPY AND/OR ENCLOSURES

ESA Federal Office
Canberra Business Centre
Bradfield St, Downer
ACT 2602

CIRCULATION

The Journal is published six times a year and is received by approximately 650 professionals Australia wide working in the areas of ergonomics, occupational health and safety, and design .

CAVEATS

The views expressed in this Journal are those of the individual authors and contributors and are not necessarily those of the Society.

The ESA Inc. reserves the right to refuse any advertising inconsistent with the Aims and Objectives of the Society and Journal Editorial Policy.

The appearance of an advertisement in the Journal does not imply endorsement by the Society of the product and or service advertised.

The Society takes no responsibility for products or services advertised herein.

AGM Information

ANNUAL GENERAL MEETING OF THE ERGONOMICS SOCIETY OF AUSTRALIA INC

to be held on Monday 5 October 1998 at 4.00 pm

AGENDA

1. WELCOME

1.1 Attendance
1.2 Apologies
1.3 Proxies registered

2. CONFIRMA TION OF THE MINUTES OF THE PREVIOUS MEETING

- 26 November 1997 on the Gold Coast, Queensland. Minutes were published earlier this year in Ergonomics Australia.

3. ACCOUNTS

3.1 Treasurer's Report
3.2 Auditor's Report

4. OFFICE HOLDERSí REPORTS

4.1 President's Report
4.2 General Secretary's Report
4.3 Journal Editor's Report - to be tabled
4.4 Professional Affairs Board - to be tabled
4.5 Special Interest Groups
  4.5.1 CHISIG - to be tabled
  4.5.2 SBESIG - to be tabled
4.6 IEA Report by Australian representative

5. ELECTION OF OFFICE-HOLDERS 1999-2000

Confirmation of the election conducted for President-elect; General Secretary-Elect and Treasurer-elect

5.1 President - David Caple
5.2 General Secretary - Tony Payne
5.3 Treasurer - Ros Kushinsky
5.4 Auditor -Arnold Harrington

6. MEMBERSHIP

6.1 Membership Criteria:

The Board recommends that the Membership Criteria be amended as follows:

MA TRIX SUMMARY OF MEMBERSHIP CRITERIA

CPE

Criteria	Benefits
• at least 5 years recent substantiated experience in the practice of ergonomics • a certificated self-assessment • supported by 2 referees • at least 3 years continuous membership of ESA or an IEA affiliated society and currently a member • demonstrated involvement in Society activity • can demonstrate applicant is currently practising in ergonomics • supports the Society and its Aim • abides by the Code of Practice	• CPE as post nominals • "Ergonomics Australia" and Branch Newsletter • vote at meetings (Branch, National & SIG) • discounts on products and services • discounted conference registration • Society directory • conference proceedings • listed on register of people for referral of work • able to hold office • Professional Indemnity Insurance available

MEMBER

Criteria	Benefits
• approved tertiary qualifications in ergonomics as determined by the Board and one year's pre- or post-qualification experience in ergonomics OR tertiary qualifications in a related discipline (as determined by the Society's Board) and 2 years substantiated experience in ergonomics • currently practising in ergonomics • nominated and seconded by existing members • supports the Society and its Aim • abides by the Code of Practice	• MESA as post-nominals • "Ergonomics Australia" and Branch Newsletter • vote at meetings (Branch, National & SIG) • discounts on products and services • discounted conference registration • Society directory • Conference Proceedings • able to hold office • Professional Indemnity Insurance available

AFFILIATE

Criteria	**Benefits**
• retains an interest in ergonomics OR a member of a SIG who does not wish to become a member of the ESA OR a full-time student of ergonomics or of a related discipline OR a person who wishes to be associated with the Society but has insufficient qualifications and / or experience to become a member • supports the Society and its Aim	• no post-nominals • "Ergonomics Australia" and Branch Newsletter • no vote at meetings (Branch, National & SIG) • discounts on products and services but at a lesser rate than for members • discounted conference registration but at a lesser rate than for members • may purchase Conference Proceedings • unable to hold office

7. CHANGES TO ARTICLES OF ASSOCIA TION

7.1 Membership Criteria:

The Board recommends that the Constitution be amended in accord with thedecisions of the previous agendum item.

7.2 PAB Rules:

Article 7.2 of the Articles of Association requires that:

"The composition of this (Professional Affairs) Board, its powers and the rules of its conduct shall be determined by the Society at a General Meeting."

The Board is of the view that changes to the PAB Rules need not wait for the approval of the whole Membership, since as it is presently constructed, no amendments can be implemented except on an annual basis.

Accordingly, the Board recommends that Article 7.2 be amended to read:

"7.2 Professional Affairs Board. The composition of this Board, its powers and the rules of its conduct

shall be determined by the Board from time to time."

8. GENERAL BUSINESS

The Board has agreed that the agenda heading "General Business" be advertised but members wishing to address items under that heading, are asked to give 14 days written notice to the Secretary-General of an intention to raise an item.

No new items of General Business shall be raised from the floor.

9. NEXT MEETING:

It is recommended that the 1999 AGM be held in Fremantle, WA during the life of the 1999 annual conference.

ITEM 6.1

MEMBERSHIP CRITERIA:

The Board recommends to the membership the following changes to Membership entry Criteria and Benefits in accordance with Article 5.1 of the Constitution that "The rules and acceptance procedures to all grades of membership of the Society are determined at an Annual General Meeting of the Society from time to time."

1. The criteria and benefits of both CPE and Member categories be changed to reflect increasing standards of entry as set out in the appended matrix;
2. In the event of these changes being accepted, a clause be accepted to allow existing members to retain their current substantive rank, (providing they do not let their membership lapse).
3. During the renewal notice period a member advising that she was taking a year's leave from her employment on maternity leave may reduce her membership level and fee obligation to the same as for Affiliates for the full membership year and return to the full previous category of membership the following year without penalty.
4. Members or CPEs who have taken time from employment to study full-time be permitted to avail themselves of the "student" fee provision without relinquishing their full status.

PROXY FORM

I hereby appoint .....

to act as my proxy at the Annual General Meeting of the Ergonomics Society of Australia Inc to be held at 4.00 pm on Monday 5 October 1998 at the Melbourne Convention Centre. I certify that I am a financial Member eligible to vote.

Name (please print): .....

Signed: .....

Dated: .....

Signature of Person bearing the Proxy vote: .....

Voting at General and Extraordinary General Meetings shall be confined to Fellows, Professional Members, Members and Retired Members who are financial at the time of the meeting. Affiliate and student members are ineligible to vote. Any Member may vote by proxy appointed in writing. The proxy shall be in writing or any other form approved by Council.

No Member may hold more than three proxies for any General Meeting.