universidade de aveiro

ieeta instituto de engenharia electrónica e telemática de aveiro

Cross-disciplinary and International Research Collaborations in Health Sciences

Luis M. T. Jesus

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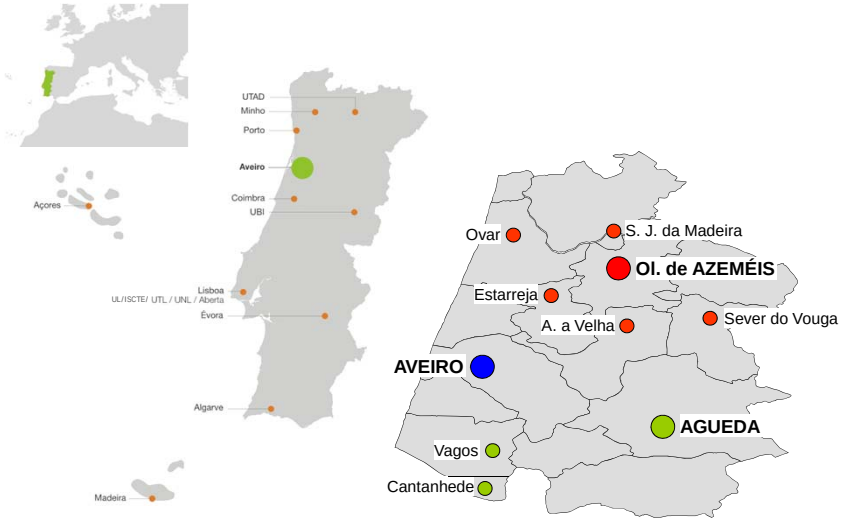
School of Health Sciences and Institute of Electronics and Telematics Engineering of Aveiro, University of Aveiro, Portugal

Aveiro

- The city of Aveiro, in the central region ("região centro") of Portugal, is located 80km from the Sá Carneiro (Porto) airport, and is easily accessible by train (Linha do Norte) and by car (motorway A1).
- This facilitates any visit from our consultants and presents a great potential for the organisation of small workshops and meetings.

From http://porto.taf.net

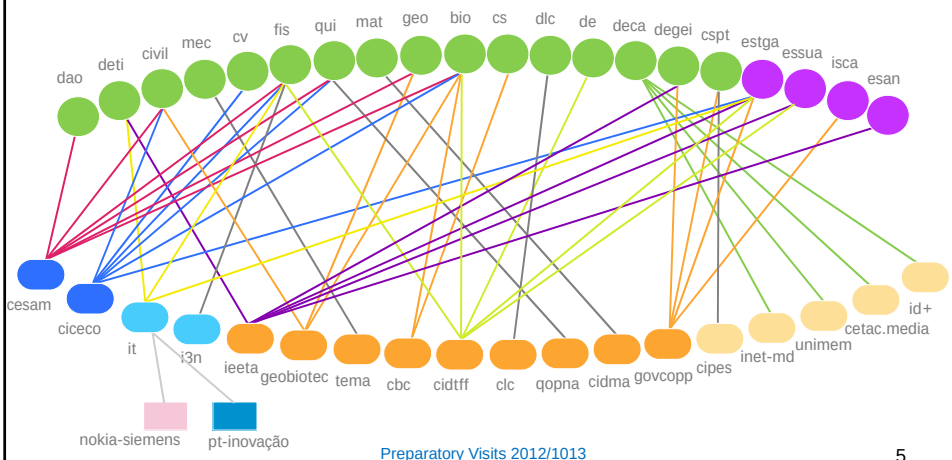
Aveiro



University of Aveiro

- Research activities are managed on a multi-disciplinary and inter-departmental basis or around specific programmes and projects.
- Latest research assessment exercise (2008) carried out by Fundação para a Ciência e a Tecnologia (FCT):
  - 77% of the Research Units achieved Excellent or Very Good.

Matrix and Interdisciplinary Organisation



Recognised Educational Commitment

- Holds the ECTS Label (2009) and the Diploma Supplement Label (2009)

- 5 Erasmus-Mundus masters
- 2 Erasmus-Mundus mobility programmes
- 2 Erasmus-Mundus doctoral programmes
- 2 Integrated Masters recognised by EURACE

With Growing International Character

- A significant foreign community

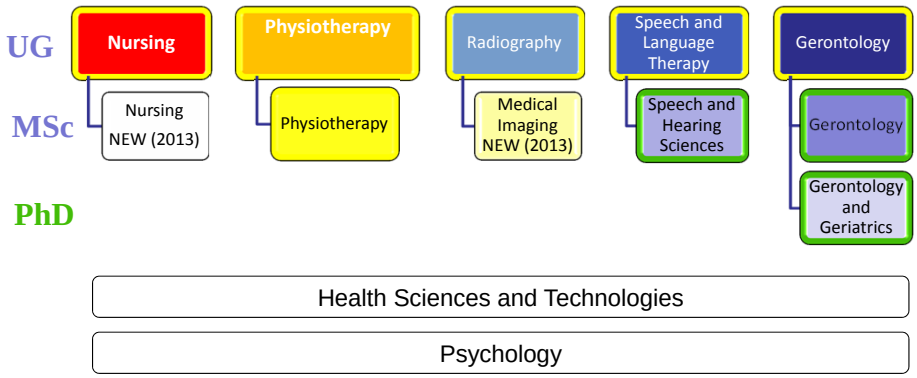
Students (including students on mobility programmes)	**1035**
Post-docs (scholarships)	**44**
Teaching staff	**50**
Researchers	**43**
Other staff	**3**

- Member of the European Consortium of Innovative Universities (ECIU), Campus Europae, EUA, …
- Underwent international institutional evaluation twice: CRE – 1996, EUA – 2007
- 10 degrees taught in English

Health Sciences Undergraduate and Postgraduate Courses

- School of Health Sciences (ESSUA) http://www.ua.pt/essua/
  - Undergraduate programs in Diagnostic Radiology, Gerontology, Nursing, Physiotherapy and Speech and Language Therapy.
  - Master program in Physiotherapy.
  - Master program in Medical Imaging (with other departments at the University of Aveiro).
- Department of Health Sciences (SACS) http://www.ua.pt/cs/
  - Undergraduate programs in Biomedical Sciences and Medicine.
  - Masters programs in Gerontology, and Speech and Hearing Sciences.
  - Doctoral programs in Gerontology and Geriatrics (with the University of Porto), and Health Sciences and Technologies.

Health Sciences Undergraduate and Postgraduate Courses



ESSUA Staff

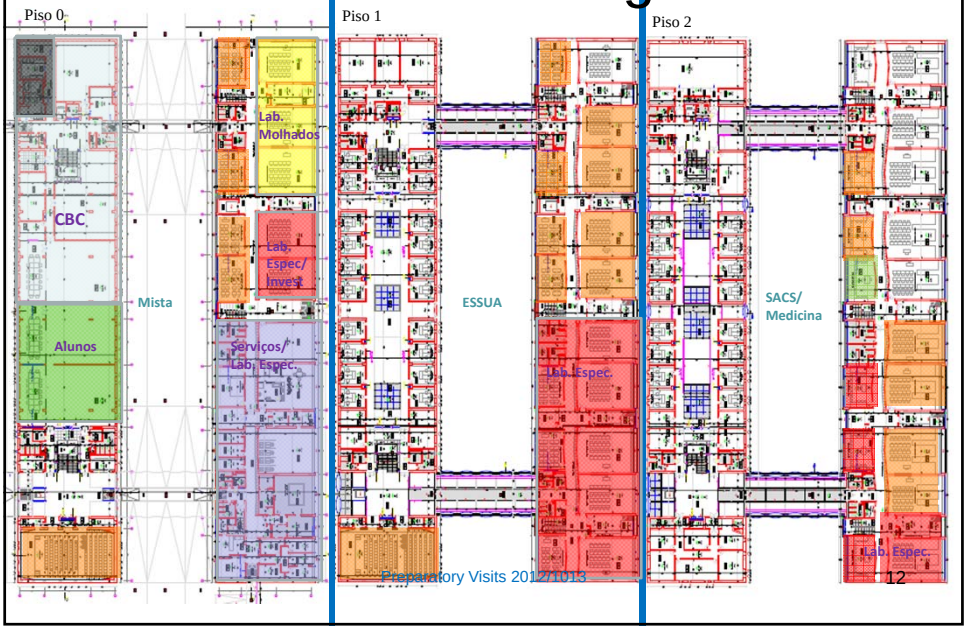
Academics	Contract 100%	Contract 50%	Total
Ph.D.	19	3	22
M.Sc.	5	7	12
B.Sc.	0	9	9
Total	24	19	43

Support staff: 6

ESSUA Students

Course	1st year	2nd year	3rd year	4th year	Total
Physio.	41	36	26	29	**132**
Radio.	23	19	25	20	**90**
SLT	26	26	21	26	**100**
Gerontology	28	26	21	---	**75**
Nursing	78	66	74	63	**281**
Physio. (M.Sc.)	17	---	---	---	**17**
					695

New Building



New Building

- Speech, Language, and Hearing Research Laboratory
  - Large quiet room.
  - Audio interfaces (2 and 10 channels), shoulder-carry and handheld multi-track solid state recorders.
  - Professional condenser microphones (Sennheiser MKH20 and MKH40) and Audiophile/headphones (HD600 Avantgarde) and professional audio monitors (ADAM Audio A8X).
  - 2 × Two-channel electroglottograph (Glottal enterprises EG2-PCX2).
  - 1 × Aerodynamic measurement system (Glottal enterprises).
  - 1 × Nasality measurement and visualisation system (Glottal enterprises).
  - Electropalatography system (WinEPG system with AAA software + Multichannel system + Ultrasound Probe Stabilisation Headset, Articulate Instruments).
  - 1 × Class 1 Sound level meter (CR:171B Cirrus Research).
  - 2 × Measurement microphones (MK:224 + MV:200F + ZE:908 Cirrus Research).
  - Audiology equipment; Speech and language therapy assessment and intervention materials.

New Building

- Speech, Language, and Hearing Teaching Laboratory
  - 15 lab desks (students typically work in groups of two): 15 PCs; 15 audio interfaces (2 channels); 30 headphones; 15 microphones.
  - Cameras and camcorders.
  - 2 × Class 2 sound level meters (CR:172B Cirrus Research).
  - 1 × Two-channel electroglottograph (Glottal enterprises EG2-PCX2).
  - 1 × Aerodynamic measurement system (Glottal enterprises).
  - 1 × Nasality measurement and visualisation system (Glottal enterprises).
  - Audiology equipment.
  - Speech and language therapy assessment and intervention materials.
- Speech and Language Therapy Clinic
  - Speech and language therapy assessment and intervention materials.
  - Observation room.

Physiotherapy Undergraduate Course

Year	S 1	S 2
1st year	Basic sciences (anatomy, physiology, human movement, introduction to physiotherapy)	
2nd year	Muscle skeletal	Neurological
3rd year	Cardio-respiratory	Special clients Groups
4th year	Research/Statistics	Clinical Placement (which also occurs in 2nd and 3rd years, 8 and 12 weeks respectively)

Nursing Undergraduate Course

Year	S 1	S 2
1st year	Basic sciences (anatomy, physiology, nursing principles)	
2nd year	Nursing in health promotion and disease prevention (obstetrics, health community and palliative care)	
3rd year	Life and Disease (medical and surgery care)	
4th year	Clinical placement (paediatrics, psychiatry, palliative care, emergency care) (which also occurs in 2nd and 3rd years, 8 and 12 weeks respectively)	

Speech and Language Therapy Undergraduate Course

Year	S 1	S 2
1st year	Basic sciences (Anatomy, Physiology, Introduction to Pathology of Communication, Linguistics, Phonetics and Psycholinguistics)	
2nd year	Assessment in SLT; Communication disorders in children	Intervention (children); Communications disorders (adults)
3rd year	Intervention (adults); Ethics; Neuroscience	Audiological assessment and rehabilitation; Congenital and developmental pathologies
4th year	Acquired pathologies; Linguistics; Phonetics; Research/Statistics	Clinical Placement (which also occur in 2nd and 3rd years, 8 and 12 weeks respectively); Final year project

Gerontology Undergraduate Course

Year	S 1	S 2
1sy year	Basic Sciences (anatomy, physiology, biology of aging, psychology of aging and epidemiology of aging)	
2nd year	Introduction to care management (multidimensional assessment, pathological aging and gerontological services)	
3rd year	Intervention (mental and physical activity, psychoeducational intervention and geriatric rehabilitation)	Clinical placement (which also occurs in the 2nd year)

Radiography Undergraduate Course

Year	S 1	S 2
1sy year	Basic sciences (anatomy, physiology, physics…)	
2nd year	Introduction to imaging modalities and imaging processing/radiation protection	
3rd year	Advanced imaging modalities / Quality control	
4th year	Research/Statistics	Clinical placement (which also occurs in 2nd and 3rd years, 8 and 12 weeks respectively)

Master Programme in Physiotherapy

- 2 years
  - 1st year dedicated to research methods and evidence base practice, physical exercise assessment and prescription, pain and functionality assessment and prescription, instrumentation, clinical topics (nutrition, multisensory and motor stimulation…)
  - 2nd year – Dissertation

Health Research Activity at the University of Aveiro

- Clinical Psychology (Department of Education)
- Associated Laboratories
  - Centre for Research in Ceramics and Composite Materials (CICECO) http://www.ciceco.ua.pt/
  - Institute of Nanostructures, Nanomodelling and Nanofabrication (i3N) http://www.i3n.org/
- Research Units
  - Centre for Cell Biology (CBC)
  - Institute of Electronics and Telematics Engineering of Aveiro (IEETA) http://www.ieeta.pt/

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Institute of Electronics and Telematics Engineering of Aveiro (IEETA)

- A research unit with a long tradition in Biomedical Engineering and Health Information Systems.

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- Wide range of human and logistic resources available to support the development of high standard research.

Current Research Collaborations

Madeline Cruice (City University, London)

- Victoria Joffe (City University, London)

David Voegeli (University of Southampton)

- Fernando Martins (University of Lisbon)

Andreia Hall (Dmat, Aveiro)

Marisa Lousada (ESSUA , Aveiro)

Our Health Research Network

Hospital de S. João

Centro Hospitalar do Porto

Unidade Local de Saúde de Matosinhos

New (June 2013) purpose built Health building with clinics

From http://www.cuco.pt

Current Postdoctoral Research Fellow and Ph.D. Students

Daniel Pape (Postdoctoral Research Fellow) – Voicing in Speech Production and Perception.

Ana Rita Valente (Ph.D. Student) – Development of Assessment Tools to Evaluate Adults With Fluency Disorders.

Brígida Patrício (Ph.D. Student) – The Impact of Communication Disability in People's With Aphasia Quality of Life.

- Susana Rodrigues (Ph.D. Student) – Acoustic Phonetics of European Portuguese Liquid Consonants.
- Moacyr Costa Filho (Ph.D. Student) – Vocal Pedagogy Using Body Movements.

Current M.Sc. Students

Diana Domingues – Phonological processes in Portuguese children with phonologically based speech sound disorder.

- Carla Oliveira – Survey of Portuguese clinical practice.
- Helena Cardoso – Phonological therapy (phonological awareness activities, auditory discrimination and listening tasks).
  - Helena's project is synched with a Master in Design student's (Margarida Mouta) work supervised by Joana Quental and Gonçalo Gomes (DCA Aveiro).

Current M.Sc. Students (Just Started or About to Start)

- Marta Silva – Assessment of functional communication in aphasia.

Cassandra Pedro – The effects of visual representations in pre-literacy skills development.

Catarina Parente – The effects of visual strategies in written language intervention for school-aged children.

- Daniela Saraiva – Computerised phonological analysis: Development of a scoring spreadsheet.

Sara Castilho and Ana Inês Tavares – Clinical Evaluation of Voice.

- Marilda Costa – European Portuguese and Brazilian Portuguese pronunciation in classical singing repertoire.

Health Assessment @ UA

- University of Aveiro's Health Assessment Tools
  - Intended to be used on a regular basis by Health professionals that develop clinical research at the University of Aveiro and for clinical training of undergraduate students.
  - Our objective is to contribute to the standardisation, objectivity and improvement of assessment procedures in Health.
  - We also hope to promote quality clinical training at the University of Aveiro and it's teaching partners.

Advanced Communication and Swallowing Assessment (ACSA)

- Bilingual (European Portuguese / British English) website

  http://acsa.web.ua.pt

  - 270 registered users; 840 downloads; 9900 hits / article views (22/9/2011 → 20/1/2013)
  - Developed using Joomla 1.6.3 + Phoca Download + …
  - Tools are available for download and distribution under the terms of the GNU General Public License as published by the Free Software Foundation http://www.gnu.org/licenses/
  - Embracing the Open source systems (OSS) model
    - "Open source systems (OSS) now extend beyond software to include open access, open documents, open science, open education, open government, open cloud, open hardware, open artworks and museum exhibits, open innovation, and more." (Hammouda et al. 2012: V)

Health Assessment Tools

- Nursing
  - Coma Recovery Instrument
- Speech and Language Therapy (SLT)
  - Stuttering
  - Swallowing
  - Voice
- Cross-disciplinary (e.g., Medicine, Nursing, Physiotherapy, Psychology or SLT)
  - The Activities/Participation Profile (TAPP)
  - Barriers and Facilitators Checklist (BFC) – Coming Soon

Publications

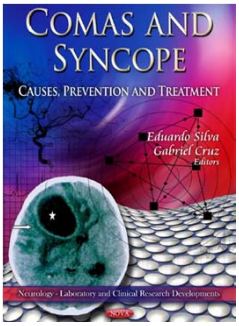
JAN JOURNAL OF ADVANCED NURSING

RESEARCH METHODOLOGY

Assessment of comatose patients: a Portuguese instrument based on the Coma Recovery Scale – Revised and using nursing standard terminology

João F.F.L. Simões, Luis M.T. Jesus, David Voegeli, Pedro Sá-Couto, Júlia Fernandes & Marília Morgado

SIMÕES J.F.F.L., JESUS L.M.T., VOEGELI D., SÁ-COUTO P., FERNANDES J. & MORGADO M. (2011) Assessment of comatose patients: a Portuguese instrument based on the Coma Recovery Scale – Revised and using nursing standard terminology. *Journal of Advanced Nursing* 67(5), 1129–1141.
doi: 10.1111/j.1365-2648.2010.05559.x



Chapter 1
In: Comas and Syncope: Causes, Prevention and Treatment ISBN 978-1-62100-603-9
Editors: Eduardo Silva and Gabriel Cruz. ©2012 Nova Science Publishers, Inc.

THE EFFECTS OF ACOUSTIC STIMULATION ON COMATOSE PATIENTS

João F. F. L. Simões[1], Luis M. T. Jesus[2], David Voegeli[3], Celso Martins[4], Andreia Hall[5] and David Simpson[6]
[1]School of Health Sciences, University of Aveiro, 3810-193 Aveiro, Portugal
[2]School of Health Sciences and Institute of Electronics and Telematics Engineering of Aveiro, University of Aveiro, 3810-193 Aveiro, Portugal
[3]School of Health Sciences, University of Southampton, Southampton S017 1BJ, UK
[4]Hospital de Santo António, Centro Hospitalar do Porto, 4099-001 Porto, Portugal
[5]Department of Mathematics and Center for Research and Development in Mathematics and Applications, University of Aveiro, 3810-193 Aveiro, Portugal
[6]Institute of Sound and Vibration Research, University of Southampton, Southampton S017 1BJ, UK

Publications

Journal of the International Phonetic Association (2010) 40/3
doi:10.1017/S0025100310000186

Temporal acoustic correlates of the voicing contrast in European Portuguese stops

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Escola Superior de Saúde da Universidade de Aveiro & Instituto de Engenharia Electrónica e Telemática de Aveiro, Universidade de Aveiro, Portugal
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Andreia Hall
Departamento de Matemática da Universidade de Aveiro e Centro de Investigação e Desenvolvimento em Matemática e Aplicações, Portugal
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D.E.L.T.A., 28:1, 2012 (1-26)

ESTIMATION OF STOPS' SPECTRAL PLACE CUES USING MULTITAPER TECHNIQUES

(Estimação das características espectrais relacionadas com o ponto de articulação de oclusivas utilizando a técnica multitaper)

Marisa Lobo LOUSADA *(ESSUA, University of Aveiro)**
Luis M. T. JESUS *(IEETA e ESSUA, University of Aveiro)***
Daniel PAPE *(IEETA, University of Aveiro)****

Publications

Journal of Phonetics 40 (2012) 625–638

Contents lists available at SciVerse ScienceDirect

Journal of Phonetics

journal homepage: www.elsevier.com/locate/phonetics

Weak voicing in fricative production

Cátia M.R. Pinho [a,b,1], Luis M.T. Jesus [a,b,*,2], Anna Barney [c,3]

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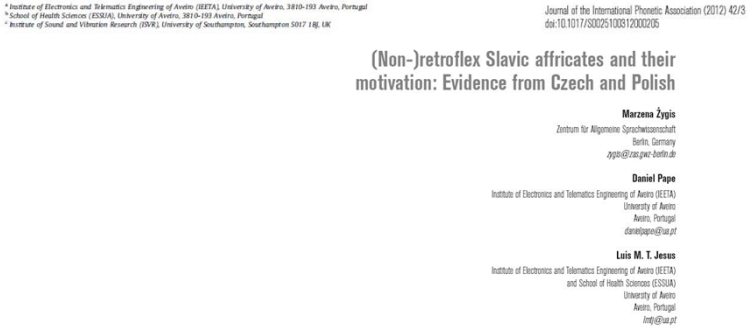

Journal of the International Phonetic Association (2012) 42/3
doi:10.1017/S0025100312000205

(Non-)retroflex Slavic affricates and their motivation: Evidence from Czech and Polish

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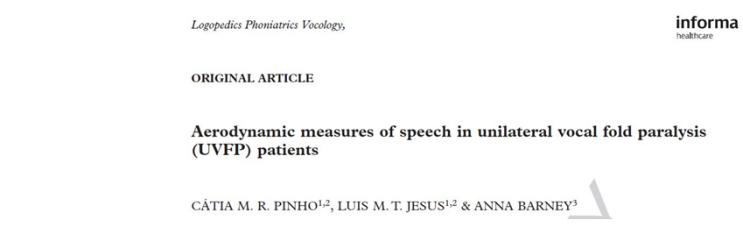
Publications (In Press)

International Journal of Language & Communication

Research Report

Phonological and articulation treatment approaches in Portuguese children with speech and language impairments: a randomized controlled intervention study

M. Lousada†, Luis M. T. Jesus†, S. Capelas‡, C. Margaça§, D. Simões¶, A. Valente*, A. Hall‖ and V. L. Joffe**



Logopedics Phoniatrics Vocology,

informa healthcare

ORIGINAL ARTICLE

Aerodynamic measures of speech in unilateral vocal fold paralysis (UVFP) patients

CÁTIA M. R. PINHO[1,2], LUIS M. T. JESUS[1,2] & ANNA BARNEY[3]

Publications (Submitted)

- Simões, J., L. Jesus, and D. Voegeli (Submitted in revised form December 2012).Verbal Communication with Unconscious Patients: Content Analysis and Development of a Stimulus Message. *Journal of Nursing Scholarship*.
- Valente, A., L. Jesus, V. Afreixo, and M. Leahy (Submitted). Time Interval Measurement of Stuttering: A Systematic Review with Meta-analysis. *Journal of Fluency Disorders*.
- Pape, D., and L. Jesus (Submitted). Perception of stop voicing with missing voice onset time in European Portuguese. *Journal of the Acoustical Society of America*.
- Pape, D., and L. Jesus (Submitted). Stop and fricative devoicing in European Portuguese, Italian and German. *Journal of Speech, Language, and Hearing Research*.

Publications (To be Submitted Soon)

- Patrício, B., L. Jesus, M. Cruice, and A. Hall (To be submitted February 2013). Portuguese Quality of Life Predictors. *Quality of Life Research*.
- Lousada, M., L. Jesus, A. Hall, and V. Joffe (To be submitted February 2013). Intelligibility as a clinical outcome measure following intervention with children with phonologically-based speech sound disorder. International *Journal of Language & Communication Disorders*.
- Matos, M., L. Jesus, M. Cruice, A. Gomes, T. Threats (To be submitted February 2013). Consequences of stroke and aphasia in the daily lives of Portuguese people with aphasia, according to the Activities/Participation domains of the ICF. *Aphasiology*.

Special Session Proposal (InterSpeech 2013, Lyon, France)

- Voicing in Speech Production and Perception
  - This special session attempts to bridge the knowledge gap between the information that we can derive from various speech production data (acoustic, aerodynamic and articulatory measures) and speech perception.
  - The focus will be on the production and perception of voicing in speech, produced by the interaction of two simultaneous sources (i.e., voicing and noise) which have a very different nature.
  - A total of thirteen (13) different research groups have manifested interest in submitting at least one paper (some more than one) to the proposed Special Session.

Call for organizers ISCA Training Schools in Speech Communication

- SCA welcomes proposals from prospective organizers of training schools under the newly launched ISCA Training Schools in Speech Communication (TSSC) Program.
- This typically concerns either summer schools or winter schools, and is geared towards providing graduate students, early stage researchers, and practitioners with background on selected topics in speech communication.
- An ISCA contribution of up to 10000€ is expected for supporting the invitation of lecturers and for providing student grants.
- Guidelines available at

  http://www.isca-speech.org/iscaweb/index.php/outreach/training/260
- Deadlines:
  - February 15th, 2013, for Summer Schools
  - July 15th, 2013, for Winter Schools

New Ideas for R&D Projects: Voice

SLT, Phonetics, Speech and Hearing Sciences, and Signal Processing.

- Automatic methods to differentiate voice disorders
  - Study/test existing techniques to detect voice disorders.
  - Develop new methods to detect and differentiate voice pathologies.
    - To be supported by the project (starting May 2013) “Advanced Voice Function Assessment Database" that involves collecting a large reference database (ethics clearance to collect and distribute the database under the terms of the GNU General Public License has been granted).
- Develop resources to support the development and validation of the Portuguese versions of standard voice auditory-perceptual evaluation scales.

New Ideas for R&D Projects: Hearing Impaired Children

- Speech production and perception in hearing impaired children
  - Production study using multi-modal data collection techniques to record acoustic and articulatory data in a group of CI and NH children.
  - Perception study to complement the acoustic and articulatory measurements. Speech-like stimuli designed to test specific aspects of vowel/consonant perception.

SLT, Audiology, Linguists, Phonetics, Speech and Hearing Sciences.

New Ideas for R&D Projects: Critical / Intensive Care

- Objective measures of physiological responses to acoustic stimulation in comatose patients.

Biomedical signal processing, Audiology and Nursing

  - Effectiveness of coma stimulation programmes, which may improve a patient's outcome and quality of life.
  - Development of biomedical signal analysis methods to assess physiological responses to auditory stimulation of comatose patients.

New Ideas for R&D Projects: Children With Speech Sound Disorders

- Intervention software

SLT, Linguistics, Phonetics, ECS and Psychology

  - This project focuses on the development of web-based software to be used by speech and language therapists and teachers for the treatment of children with speech sound disorders.
  - A range of therapy activities (including instructions, pictures, focused feedback and reinforcement) with different intervention approaches and therapy objectives will be developed.
  - The software will be simultaneously developed for Portuguese and English speaking children.
- Early reading interactions

New Ideas for R&D Projects: The Role of Inflammation in Hearing Loss

- Diabetes and hearing loss

Audiology and Nursing

  - Develop an effective way of screening diabetes based on hearing predictors.
  - Compelling evidence that people with diabetes are more likely to have hearing loss
  - The strength of this association is currently being estimated.
  - Specific guidelines for screening of hearing loss in people with diabetes are currently not available.
  - The kind of risk test that the ADA propose does not include anything related to hearing loss, so this could also be an important contribution of this study.

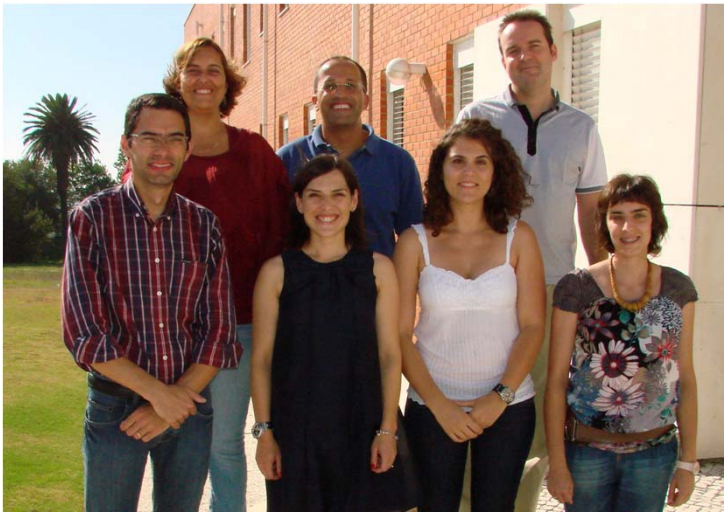
EU Funding Opportunities

- …-2013: Liflelong Learning Programme.
  - Marie Curie Actions - Research Fellowship Programme.
  - COST (next application deadline is the 29th March 2013).
- 2014-2020: Horizon 2020 (Framework Programme for Research and Innovation).
  - Erasmus for All (European Commission).
  - YES Europe (European Parliament').

Liflelong Learning Programme Funding Possibilities until 2013

- Mobility of individuals.
- Bilateral and multilateral partnerships.
- Unilateral and national projects.
- Multilateral projects and networks.
- Probably too late now, for the main 2013 deadlines but existing programmes could provide useful indicators:
  - Comenius individual pupil mobility.
  - Comenius, Erasmus, Leonardo da Vinci and Grundtvig multilateral projects and networks.
  - Leonardo da Vinci multilateral projects for the transfer of innovation.

Key application documents

- Call for Proposals and guide for applicants http://ec.europa.eu
- Application forms and procedures: National Agencies (listed at) http://ec.europa.eu/education/lifelong-learning-programme/national_en.htm
- Executive Agency: http://eacea.ec.europa.eu/

Thank You