

# ANNUAL MEETING 2020



## HEALTH 4.0: DESIGNING TOMORROW'S HEALTHCARE

PROCEEDINGS OF THE 6<sup>TH</sup> ANNUAL MEETING

25 - 27 JUNE



**Coimbra  
Health School**  
Polytechnic of Coimbra



## FICHA TÉCNICA

### **Título**

Coimbra Health School - Annual Meeting 2020  
Health 4.0: designing tomorrow's healthcare

### **Sub-Título**

Proceedings of the 6<sup>th</sup> Annual Meeting

### **Editora**

Instituto Politécnico de Coimbra  
Escola Superior de Tecnologia da Saúde

### **Coordenação Editorial**

Filipe Amaral; Lúcia Simões Costa; Margarida Serrano

### **Data**

Junho de 2020

### **Design da capa**

Sandra Ferreira

### **ISBN**

978-989-8252-54-8

**Advertências**

O conteúdo da presente publicação não reflecte necessariamente a opinião oficial Escola Superior de Tecnologia da Saúde de Coimbra. A instituição não é responsável pelo uso que possa ser feito da informação contida na presente publicação. Esta publicação contém informações obtidas de fontes autênticas. Foram efetuados esforços consideráveis no sentido de publicar dados e informações fiáveis. No entanto, a coordenação editorial não pode assumir a validade de todos os materiais ou as consequências de seu uso.

**Marcas**

Produtos ou nomes de empresas podem ser marcas comerciais ou marcas comerciais registradas e são usados somente para identificação e explicação, sem intenção de infringir.

**Direitos de autor**

Reprodução autorizada, desde que a fonte seja citada, salvo quando especificado em contrário.



ESCOLA SUPERIOR DE TECNOLOGIA DA SAÚDE DE COIMBRA  
Rua 5 de Outubro  
S. Martinho do Bispo  
3040-854 Coimbra  
Portugal

Web: [www.estescoimbra.pt](http://www.estescoimbra.pt) | <https://annualmeeting.estescoimbra.pt/>  
Email: [annualmeeting@estescoimbra.pt](mailto:annualmeeting@estescoimbra.pt)

## ÍNDICE

Índice.....	1
Mensagem do Presidente da Coimbra Health School.....	2
Mensagem da Comissão Organizadora.....	3
Comissões.....	4
Programa científico.....	5
Comunicações orais.....	8
Pósteres.....	19
Workshops.....	91

**JOÃO JOSÉ JOAQUIM**

Em 2020 tínhamos projectado a 6ª edição do Annual Meeting para debater a tecnologia e a sua importância no contexto da saúde, com o tema Saúde 4.0, longe de imaginarmos como o tema se ia cruzar com a realidade, em que a tecnologia tem servido para nos aproximar, dar continuidade à actividade académica e ao nosso quotidiano, ajustado às circunstâncias. A pandemia permitiu, entre outras coisas, esclarecer a dimensão e extensão do impacto da tecnologia, que já fazia parte da nossa vida, mas que passava despercebida pela forma como a assumimos no dia-a-dia e a resposta em cuidados de saúde rentabilizou-a.

Tal contexto obrigou-nos a reinventar processos e a encontrar soluções assumindo e operacionalizando as necessárias adaptações que nos permitissem continuar, como comunidade do ensino superior que se deve conseguir adaptar em situações adversas.

Nessa perspectiva o Annual Meeting 2020 reorganizou-se na sua metodologia e forma de organização e reconverteu-se num evento realizado à distância. É certo que já todos percebemos que o registo presencial tem características únicas pela componente emocional que aporta na criação de redes e laços que não se conseguem num registo concretizado à distância, no entanto é possível concretizar as expectativas de todos os envolvidos, quer na organização quer na participação para que o evento possa cumprir os seus objectivos.

Pela excelência dos convidados e a forte adesão da comunidade académica, científica e profissional, retratada nos mais de 150 trabalhos submetidos e mais de 350 participantes, perspectiva-se um conjunto de debates e de comunicações de elevada qualidade que despertarão o interesse e a reflexão dos participantes.

Fica o agradecimento a todos os envolvidos nas diferentes comissões do evento, na pessoa dos seus coordenadores, bem como aos que dão dimensão ao evento, os participantes.

Bem-vindos à Escola Superior de Tecnologia da Saúde de Coimbra, ainda que de forma virtual.

Coimbra, 25 de junho de 2020

O Presidente da ESTeSC

*João José Joaquim*

## MENSAGEM DA COMISSÃO COORDENADORA

FILIPE AMARAL E MARGARIDA SERRANO

Health 4.0: Designing Tomorrow`s Healthcare [Saúde 4.0: desenhar a saúde de amanhã] é o tema da 6ª edição do Annual Meeting da Escola Superior de Tecnologia da Saúde de Coimbra (ESTeSC). Iniciámos a projetar esta partilha de saberes há 14 meses e apesar de sempre termos dito que o tema escolhido era ambicioso e atual nunca pensámos que além de o refletir o íamos colocar em prática.

Em Ciência quando algo de único e excêntrico acontece é frequente associar-lhe o termo singularidade. E é isso mesmo o que estamos a vivenciar por estes dias. Vivenciamos uma singularidade não somente pelo facto de estarmos sob os efeitos de uma pandemia, mas porque pela primeira vez na História a enfrentamos tendo à nossa disposição ferramentas, que não existiam até há bem pouco tempo, e que permitiram assegurar, mesmo à distância, o funcionamento de serviços (alguns deles essenciais), viabilizando a compatibilização do confinamento com a regular prestação de serviços de educação, teleconsultas, comércio *online*, gestão de redes informática, transacções financeiras, actividades culturais diferenciadas, e até assistir a conferências como esta a partir de qualquer ponto do Universo.

A área dos cuidados de saúde verá nos próximos anos uma transformação sem precedentes com a incorporação de mais sistemas inteligentes no apoio à operacionalização e gestão em meio hospitalar, bem como na comunicação utente – instituição de saúde – profissional de saúde. Termos como *internet of things*, *app*, virtualização, *blockchain*, telessaúde, *big data*, inteligência artificial, cibersegurança, já invadiram o léxico do profissional de saúde e, mais do que isso, desafiam-no a acompanhar a incorporação destas ferramentas/tecnologias no seu local de trabalho. O reconhecimento deste evento pela FCT com o selo INCoDe.2030, mostra quão empenhados nós Annual Meeting e ESTeSC estamos em seguir uma rota de valorização das competências digitais dos profissionais de saúde de hoje e do futuro.

Ao longo deste congresso tivemos oportunidade de desenvolver este tema e perceber que a disrupção tecnológica está dependente da vossa ação, da vossa capacidade e motivação para aceitar aprender mais e empreender mais na vossa instituição.

Olhando em retrospectiva para o último ano de construção deste evento, podemos agora dizê-lo, em boa hora decidimos avançar para este modelo de conferência *online*. Neste livro de atas está uma súmula do que foram os três dias de congresso. Foram 25 os palestrantes que passaram pela nossa sala virtual principal, falando-nos a partir do Brasil, Holanda, Bélgica, Espanha e Portugal. Foram ainda realizados 3 *workshops* que contaram com um total de 61 participantes. Publicamos também os 71 resumos de trabalhos aceites para comunicação em póster, dos quais 60 foram apresentados nesta conferência, bem como os títulos dos 67 resumos publicados na revista *European Journal of Public Health*, dos quais 61 foram apresentados oralmente, distribuídos pelas 8 sessões paralelas de comunicações livres. Concluindo, estamos gratos a todos os autores que, provenientes do Brasil, Itália, Espanha, Croácia, ... e de norte a sul de Portugal, escolheram o Annual Meeting para divulgar os seus trabalhos.

Bem-hajam!

## COMISSÕES

### PRESIDENTE

João José Joaquim.

### COMISSÃO COORDENADORA

Filipe Amaral; Margarida Serrano.

### COMISSÃO CIENTÍFICA

Presidente: Lúcia Simões Costa (Portugal), Agostinho Cruz (Portugal), Ana Lúcia Baltazar (Portugal), Ana Maria Valado (Portugal), Ana Martín Suárez (Espanha), Ana Paula Fonseca (Portugal), António Lopes (Portugal), António Teixeira (Portugal), Birger Kollmeier (Alemanha), Camilla Hesse (Suécia), Carla Matos Silva (Portugal), Dina Leitão (Portugal), Francisco Alves (Portugal), Graciano Paulo (Portugal), Guilherme Franco Netto (Brasil), Helder Simões (Portugal), Jan Cabri (Luxemburgo), Jonathan McNulty (Irlanda), Jorge Bernardino (Portugal), José Camolas (Portugal), Margarida Eiras (Portugal), Miguel Morgado (Portugal), Nelson Azevedo Barros (Portugal), Rui Gonçalves (Portugal), Telmo Pereira (Portugal), Tiago Jacinto (Portugal), Victoria Heldestad (Irlanda).

### COMISSÃO ORGANIZADORA

**DOCENTES:** Anabela Martins, Diana Martins, Fernando Moreira, Isabel Andrade, João Almeida, João Lima, Maria Inês Araújo, Óscar Tavares, Paulo Caseiro, Sofia Viana.

**ALUNOS:** Carolina Suzano, Catarina Gaspar, Inês Eufrazio, João Rodrigues, Margarida Tomé, Miguel de Campos e Silva, Raquel Alexandra Barreto, Tatiana Ferreira.



## PROGRAMA CIENTÍFICO

### 26 DE JUNHO

8:30 **Abertura**

9:30 **Palestra Inaugural**

Healthcare in 2030

*Miguel Patrício Dias (Booking.com, Holanda)*

Moderador: *Francisco Alves (ESTeSC - IPC)*

10:00 **Painel 1: Inteligência Artificial – “IA a par com a nossa Saúde”**

**Moderadora:** *Ana Alves (ISEC – IPC)*

- Onde para a Inteligência Artificial  
*Jorge Soares (IBM, Portugal)*
- Artificial Intelligence for Cochlear Implant Fitting  
*David Pascoal (Eargroup, Bélgica)*
- Aplicación de la Inteligencia Artificial (IA) a la realidad de la salud  
*Fernando Hernández (General Electric, Portugal)*

11:10 **Painel 2: Sustentabilidade - "Novas Tecnologias e Desenvolvimento Sustentável"**

**Moderadora:** *Nelson Barros (Universidade Fernando Pessoa)*

- Fiocruz's Strategic Centre for Health, Environment and Sustainability  
*Guilherme Franco Netto (Fundação Oswaldo Cruz, Brasil)*
- The role of new processes/technologies to develop sustainable ingredients  
*Manuela Pintado (Universidade Católica Portuguesa)*
- New Technologies and Sustainable Development  
*Ada Rocha (Faculdade de Ciências da Nutrição e Alimentação, Universidade do Porto)*

12:20 **Sessão de Abertura Solene**

- *Jorge Conde (Presidente do Instituto Politécnico de Coimbra)*
- *João José Joaquim (Presidente da ESTeSC – Coimbra Health School)*
- *Raquel Luís (Presidente da Associação de Estudantes da ESTeSC)*
- *Telmo Pereira (em representação da Comissão Científica do evento)*
- *Filipe Amaral & Margarida Serrano (Coordenadores do evento)*

14:00 **Painel 3 - Ómicas - "A era das ómicas: visitar o futuro"**

**Moderadora:** *Conceição Calhau (Universidade Nova de Lisboa)*

- A bigenómica em doenças raras: visitar o futuro  
*Manuela Grazina (Faculdade Medicina, Universidade de Coimbra)*
- O contributo da biopsia líquida na era da medicina personalizada  
*Ana Gomes e Paulo Teixeira (Laboratório da Biologia Molecular, CHUC)*
- Unraveling the human gut microbiota in the omic era

*Alexandre Lamas, Laboratorio de higiene, inspección y control de alimentos, Facultad de Veterinaria, Universidad de Santiago de Compostela, Espanha*

- A nova era da Medicina Personalizada e de Precisión  
*Angel Carracedo, Galician Genomic Medicina Public Foundation and Spanish Genotyping National Center (CrGen), Espanha*

15:15 **Painel 4: Telessaúde**

**Moderador:** *Luis Gonçalves (Centro Hospitalar Universitário Cova da Beira)*

- Capacidade de tratamento  
*César Nunes (Centro Cirúrgico de Coimbra)*
- VITASENIOR-MT – A tele-assistance solution available to aging  
*Gabriel Pires (Instituto Politécnico de Tomar)*
- e-Health Challenges  
*Telma Mota (Altice Labs, Portugal)*
- 5G exploitation for mission critical communications  
*Francisco Fontes (Altice Labs, Portugal)*

16:35 **Painel 5: Big data e Cuidados de saúde centrados no doente**

**Moderador:** *Jorge Bernardino (I2A - IPC)*

- Big data analytics in Healthcare  
*Manuel Barrento (Universidade Nova de Lisboa)*
- SPIRO – How mobile apps can empower patients  
*João Valeriano (SPIRO, Portugal)*
- Big data e cuidados de saúde centrados no e-cidadão  
*Filipa Fixe (Glintt, Portugal)*
- À conversa sobre cibersegurança em tempos de pandemia  
*Lino Santos (Centro Nacional de Cibersegurança, Portugal)*

18:00 **Comunicações Livres**

## 27 DE JUNHO

9:30 **Reabertura**

9:40 **Palestra**

Implicações éticas da digitalização e dos avanços da genética na Saúde das populações  
*André Dias Pereira (Faculdade de Direito, Universidade de Coimbra)*

Moderador: *João José Joaquim (Presidente da ESTeSC - IPC)*

10:20 **Painel 6: Formação e Novas Formas de Organização de Trabalho**

**Moderador:** *Filomena Girão (Presidente do Conselho Geral do IPC)*

- How AI Talent is changing the European Labor Market *Ricardo Castanheira (Conselheiro Técnico na Representação Permanente de Portugal junto da União Europeia, Bruxelas, Bélgica)*
- Transformação digital na Saúde e o impacto nos hospitais, um novo modelo de Taylorismo?  
*Pedro Roldão (Administrador do Centro Hospitalar e Universitário de Coimbra)*
- Human-Driven Digitalization supported by AI  
*Hugo Marques (Siemens Healthineers, Portugal)*
- Digital upskilling & reskilling: using DigComp as a guiding tool  
*Margarida Lucas (Centro de Investigação em Didática e Tecnologia na Formação de Formadores, Universidade de Aveiro)*

11:30 **Momento Musical e Sessão de Encerramento**

14:00 **Workshops paralelos**

- Treino Auditivo: uma aplicação com ruído  
*Filipa Maia, Luís Marcelino, Vitor de Jesus, Sérgio Paulo, Margarida Serrano, Projeto Experiências Auditivas Melhoradas, EVOLLU/ESTeSC-IPC*
- Estimulação Auditiva Ritmica na Doença de Parkinson  
*Maria Coriolano, Izaura Azevedo e Ihana Gondim, Universidade Federal de Pernambuco*
- Microbiota Intestinal e Saúde  
*Cláudia Marques, Universidade Nova de Lisboa*

16:30 **Comunicações Livres**

## COMUNICAÇÕES ORAIS<sup>1</sup>

*(pela ordem de apresentação no evento e por sessão)*

---

<sup>1</sup> Os resumos das comunicações orais que seguidamente se apresentam podem ser consultados no Suplemento da revista [European Journal of Public Health](#).

26 de junho: 18.00 h - 20.00 h

### Sessão 1

Moderadora: Professora Doutora Paula Fonseca

#### **31 - Comparison between two databases regarding the classification of Drug Interactions and their mechanism of action**

D Fernandes<sup>1</sup>, A Jesus<sup>1</sup>

<sup>1</sup>Centro de Investigação em Saúde e Ambiente, Escola Superior de Saúde do Porto, Instituto Politécnico do Porto, Portugal  
Email: daniela\_94@live.com.pt; acj@estsp.ipp.pt

#### **64 - Impact of adverse effects to oral antidiabetics on adherence and quality of life in patients with type 2 diabetes**

C Almeida<sup>1</sup>; C Rocha<sup>2</sup>; R Cruz<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Farmácia, Portugal

<sup>2</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Ciências Complementares, Portugal  
Email: carina\_almeida94@hotmail.com

#### **69 - Prevalence of self-medication in adolescents**

I Almeida<sup>1</sup>, C Rocha<sup>2</sup>, J Balteiro<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Farmácia, Portugal

<sup>2</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Ciências Complementares, Portugal  
Email: ines\_almeida1@hotmail.com

#### **114 - Non-adhesion to therapy in the elderly, in Tábua**

M Campos<sup>1</sup>, J Balteiro<sup>1</sup>, C Rocha<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Farmácia, Portugal

<sup>2</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Ciências Complementares, Portugal  
Email: mariana.c.campos@gmail.com

#### **117 - Influence of prenatal exposure to dexamethasone on neurodevelopmental behaviour**

A Cruz<sup>1,2</sup>, C Henriques<sup>1,2</sup>, A Ferreira<sup>1,2</sup>, S Galvão<sup>1,2</sup>, C Neves<sup>1,2</sup>, R Gaspar<sup>1,2</sup>, A Ambrósio<sup>1,2</sup>, C Gomes<sup>1,2,3</sup>, F Baptista<sup>1,2</sup>

<sup>1</sup>iCBR - Coimbra Institute for Clinical and Biomedical Research, Faculty of Medicine, University of Coimbra, Portugal.

<sup>2</sup>CIBB - Center for Innovative Biomedicine and Biotechnology, University of Coimbra, Coimbra, Portugal.

<sup>3</sup>Faculty of Pharmacy, University of Coimbra, Portugal.

Email: affcruz@gmail.com

#### **139 - Self-medication practice in different contexts: higher education students vs. users of an interior pharmacy**

M Vintém<sup>1</sup>, C Rocha<sup>2</sup>, J Balteiro<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Farmácia, Portugal

<sup>2</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Ciências Complementares, Portugal  
Email: vntmario@gmail.com

#### **178 - Evaluation of Health Literacy and Therapy Adherence Levels in the Mealhada Municipality Population**

J Luís<sup>1</sup>, C Rocha<sup>1</sup>, J Balteiro<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

Email: joananorteluis@gmail.com

#### **202 - Current Point-of-Care testing in cancer and future perspectives: a systematic review**

M Rodrigues<sup>1</sup>, I Andrade<sup>2</sup>, R Cruz<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Farmácia, Portugal

<sup>2</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Ciências Complementares, Portugal  
Email: marianaasmr@gmail.com

## 203 - Cannabis Therapeutic Applications - Review

J Faim<sup>1</sup>, J Balteiro<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

Email: joao-ps@live.com.pt

## 219 - Pharmacogenomics - the state of the art in drug prescription

R Ferreira<sup>1</sup>, CA Gomes<sup>2</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Farmácia, Portugal

<sup>2</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Ciências Complementares, Portugal

Email: alcobia@estescoimbra.pt

## Sessão 2

Moderadora: Professora Doutora Ana Valado

## 17 - Occupational Contamination with Cyclophosphamide in Manipulators

S Martins<sup>1</sup>, Z Moreira<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Farmácia, Portugal

Email: zeliabarbosa@estescoimbra.pt

## 58 - Respiratory infections caused by Haemophilus influenzae $\beta$ -lactamase positive carrying blaTEM gene

J Valério<sup>1</sup>, H Ferreira<sup>2</sup>, C Chaves<sup>2</sup>, F Rodrigues<sup>2</sup>, N Osório<sup>1,3</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Ciências Biomédicas Laboratoriais, Portugal

<sup>2</sup>Centro Hospitalar e Universitário de Coimbra, E.P.E., Coimbra, Portugal

<sup>3</sup>Universidade de Coimbra – Físico-Química Molecular, Coimbra, Portugal

Email: jessicavalerio6@gmail.com; nadia.osorio@estescoimbra.pt

## 115 - Evaluation of MMP-10 and TIMP-1 levels associated with Resveratrol supplementation

AM Silva<sup>1</sup>, C Ferreira<sup>1</sup>, I Silva<sup>1</sup>, M Clemente<sup>1</sup>, JP Figueiredo<sup>2</sup>, T Pereira<sup>3</sup>, A Gabriel<sup>1</sup>, A Caseiro<sup>1,4,5</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC, Ciências Biomédicas Laboratoriais, Portugal

<sup>2</sup>Instituto Politécnico de Coimbra, ESTeSC, Ciências Complementares, Portugal

<sup>3</sup>Instituto Politécnico de Coimbra, ESTeSC, Fisiologia Clínica, Portugal

<sup>4</sup>LABINSAÚDE - Laboratório de Investigação em Ciências Aplicadas à Saúde, Instituto Politécnico de Coimbra, ESTeSC, Portugal

<sup>5</sup>Unidade I&D Química-Física Molecular, Faculdade de Ciências e Tecnologia, Universidade de Coimbra, Portugal

Email: ana.margarida.silva22@gmail.com

## 120 - Targeting TRIB2 expression with oral antidiabetic drugs to overcome tumour malignancy and drug-resistance.

A Sousa-Coelho<sup>1,2,3,4,5</sup>

<sup>1</sup>CBMR, Centre for Biomedical Research - Universidade do Algarve, Portugal

<sup>2</sup>CENIE, Centro Internacional sobre o Envelhecimento; Portugal

<sup>3</sup>ESSUALg, Escola Superior de Saúde da Universidade do Algarve, Portugal

<sup>4</sup>CESUALg, Centro de Estudos e Desenvolvimento em Saúde da Universidade do Algarve, Portugal

<sup>5</sup>ABC, Algarve Biomedical Center, Portugal

Email: alcoelho@ualg.pt

## 123 - MRSA/MSSA causing infections: prevalence of mecA gene

G Vieira<sup>1</sup>, N Leal<sup>1</sup>, A Rodrigues<sup>2</sup>, C Chaves<sup>2</sup>, F Rodrigues<sup>2</sup>, N Osório<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Ciências Biomédicas Laboratoriais, Portugal

<sup>2</sup>Centro Hospitalar e Universitário de Coimbra, Portugal

Email: gabrielatavaresvieira@gmail.com

## 140 - TESTy – Typing Easier: an innovate device to characterize blood samples

C Mourato<sup>1</sup>, D Martins<sup>1,2</sup>, R Teixo<sup>3</sup>, F Mendes<sup>1,3,4</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Ciências Biomédicas Laboratoriais, Portugal

<sup>2</sup>IBS, Instituto de Investigação e Inovação em Saúde, University of Porto, Porto, Portugal

<sup>3</sup>Biophysics Institute, Coimbra Institute for Clinical and Biomedical Research (iCIBR) area of Environment Genetics and Oncobiology (CIMAGO), Faculty of Medicine, University of Coimbra, Portugal, Foundation for Science and Technology (FCT), Portugal (Strategic Projects UID/NEU/04539/2013 and UID/NEU/04539/2019) and COMPETE-FEDER (POCI-01-0145-FEDER-007440)

<sup>4</sup>CNC.IBILI Consortium/Center for Innovative Biomedicine and Biotechnology (CIBB), University of Coimbra, Portugal  
Email: cristiana.mourato.192@gmail.com

### 141 - Forssman Prevalence in a Portuguese Donor Population

C Mourato<sup>1</sup>, A Corpuz<sup>2</sup>, J Sousa<sup>1</sup>, D Martins<sup>1,3</sup>, C Pereira<sup>4</sup>, J Tomaz<sup>4</sup>, R Barreira<sup>1,4</sup>, C Rocha<sup>5</sup>, F Mendes<sup>1,6,7</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Ciências Biomédicas Laboratoriais, Portugal

<sup>2</sup>School of Biological Sciences, Dublin Institute of Technology, Kevin St, Dublin 8, Ireland

<sup>3</sup>I3S, Instituto de Investigação e Inovação em Saúde, University of Porto, Porto, Portugal

<sup>4</sup>Blood Bank Service, Coimbra Hospital and University Center, Coimbra, Portugal

<sup>5</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Ciências Complementares, Portugal

<sup>6</sup>CNC.IBILI Consortium/Center for Innovative Biomedicine and Biotechnology (CIBB), University of Coimbra, Portugal

<sup>7</sup>Biophysics Institute, Coimbra Institute for Clinical and Biomedical Research (iCIBR) area of Environment Genetics and Oncobiology (CIMAGO), Faculty of Medicine, University of Coimbra, Portugal Foundation for Science and Technology (FCT), Portugal (Strategic Projects UID/NEU/04539/2013 and UID/NEU/04539/2019) and COMPETE-FEDER (POCI-01-0145-FEDER-007440)

Email: cristiana.mourato.192@gmail.com

### 208 - Hydrotherapy in the evaluation of enzymatic antioxidants in an elderly population

A Valado<sup>1,2</sup>, S Fortes<sup>1</sup>, M Morais<sup>1</sup>, J Rosado<sup>3,4</sup>, JP Figueiredo<sup>5</sup>, R Barreira<sup>1,6</sup>, A Caseiro<sup>1,7</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC - Coimbra Health School, Ciências Biomédicas Laboratoriais, Portugal

<sup>2</sup>MARE (Centro de Ciências do Mar e Ambiente), FCTUC, Coimbra, Portugal

<sup>3</sup>Instituto Politécnico de Coimbra, ESTeSC - Coimbra Health School, Fisioterapia, Portugal

<sup>4</sup>Centro Rainha Santa Isabel Cáritas Diocesana de Coimbra, Portugal

<sup>5</sup>Instituto Politécnico de Coimbra, ESTeSC - Coimbra Health School, Ciências Complementares, Portugal

<sup>6</sup>Centro Hospitalar e Universitário de Coimbra, Coimbra, Portugal

<sup>7</sup>Unidade I&D Química-Física Molecular, FCTUC, Coimbra, Portugal

Email: armandocaseiro@estescoimbra.pt

### 214 - Inflammation disrupts epithelial barrier function and induces the release of different populations of exosomes

B Martins<sup>1,2</sup>, T Rodrigues<sup>1,2</sup>, J Ramalho<sup>3</sup>, A Ambrósio<sup>1,2</sup>, H Girão<sup>1,2</sup>, R Fernandes<sup>1,2</sup>

<sup>1</sup>Coimbra Institute for Clinical and Biomedical Research (iCIBR), Faculty of Medicine, University of Coimbra (FMUC), Portugal

<sup>2</sup>Center for Innovative Biomedicine and Biotechnology (CIBB), University of Coimbra, Portugal

<sup>3</sup>Centro de Estudos de Doenças Crónicas (CEDOC) and NOVA Medical School, Faculdade de Ciências Médicas (NMS/FCM), Portugal

Email: mrro.54@gmail.com

## Sessão 3

Moderador: Professor Doutor Joaquim Castanheira

### 36 - Anisometropia in the 5th and 6th school years

A F Nunes<sup>1,2</sup>, A S Nunes<sup>1,3</sup>, P Monteiro<sup>1,2</sup>, C R Martins<sup>4</sup>, H Forte<sup>4</sup>

<sup>1</sup>Universidade da Beira Interior

<sup>2</sup>Centro de Investigação em Ciências da Saúde (CICS)

<sup>3</sup>Núcleo de Estudos em Ciências Empresariais (NECE)

<sup>4</sup>Unidade de Saúde Pública (USP)-Agrupamento de Centros de Saúde Cova da Beira (ACeS CB)

Email: amnunes@ubi.pt

### 50 - Implementation of a Sleep Hygiene Program in 4 - 6 Year Old Portuguese Children: the “It is Time to Sleep” Project First Results

G Fonseca<sup>1</sup>, AC Marques<sup>1</sup>, DG Vidal<sup>2</sup>, M Pontes<sup>2</sup>, MA Martins<sup>1</sup>

<sup>1</sup>University Fernando Pessoa, UFP Energy, Environment and Health Research Unit, Portugal

<sup>2</sup>Local Health Unit of Matosinhos, Senhora da Hora Community Care Unit, Portugal

Email: diogoguedesvidal@hotmail.com

### **51 - Parental Knowledge about Healthy Sleep Hygiene practices in Children under 6 Year Old: an Exploratory Study**

G Fonseca<sup>1</sup>, AC Marques<sup>1</sup>, DG Vidal<sup>2</sup>, M Pontes<sup>2</sup>, MA Martins<sup>1</sup>

<sup>1</sup>University Fernando Pessoa, UFP Energy, Environment and Health Research Unit, Portugal

<sup>2</sup>Local Health Unit of Matosinhos, Senhora da Hora Community Care Unit, Portugal

Email: diogoguedesvidal@hotmail.com

### **67 - Effects of sleep deprivation on arterial vasculature in university students**

Raquel Freitas<sup>1</sup>, Helder Santos<sup>1</sup>, Clara Rocha<sup>1</sup>, Telmo Pereira<sup>1</sup>, Jorge Conde<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

Email: vraquelrfreitas@gmail.com

### **72 - Development of a Virtual Game with Android Operating System for the Rehabilitation of Chewing and Swallowing in the Elderly**

C Lins<sup>1</sup>, T Silva<sup>1</sup>, L Albuquerque<sup>1</sup>, R Moreira<sup>1</sup>, M Coriolano<sup>1</sup>, M Rodrigues<sup>1</sup>

<sup>1</sup>UFPE-Federal University of Pernambuco

Email: cabralcarla1@hotmail.com

### **82 - Association among fatigue, sleep disorders and other clinical parameters in Parkinson's disease**

A Asano<sup>1</sup>, N Asano<sup>1</sup>, D Mota<sup>1</sup>, I Gondim<sup>1</sup>, F Aroxa<sup>2</sup>, M Coriolano<sup>1</sup>, O Lins<sup>1</sup>

<sup>1</sup>Pro-Parkinson Program of Clinical Hospital of Federal University of Pernambuco – Recife (PE), Brazil

<sup>2</sup>Federal University of Pernambuco – Recife, Pernambuco (PE), Brazil

Email: amdoreasano@gmail.com

### **91 - Lung function in wind instrument players of philharmonic bands**

I Cunha<sup>1</sup>, L Gonçalves<sup>1</sup>

<sup>1</sup>Departamento de Tecnologia de Diagnóstico e Terapêutica, Curso de Fisioterapia da Escola Superior de Saúde do Vale do Sousa – CESPU, Paredes, Portugal

Email: ilcunha1997@gmail.com

### **143 - Obstructive Sleep Apnea Syndrome - Predictive Indicators of Severity**

J Castro<sup>1</sup>, H Silva<sup>1,2</sup>, P Coelho<sup>2</sup>, T Pereira<sup>1</sup>

<sup>1</sup> Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Fisiologia Clínica, Portugal

<sup>2</sup>Departamento de Neurologia, Unidade Local de Saúde de Matosinhos, Hospital Pedro Hispano

Email: joana97castro@gmail.com

### **154 - Correlation between sarcopenia and atherosclerosis/cardiovascular risk factors in the elderly.**

A Sousa-Coelho<sup>1,2,3,4,5</sup>; M Botelho<sup>1,2</sup>; C Guerreiro<sup>1</sup>; S Pais<sup>1,2,5,6</sup>

<sup>1</sup>CBMR, Centre for Biomedical Research - Universidade do Algarve

<sup>2</sup>CENIE, Centro Internacional sobre o Envelhecimento

<sup>3</sup>ESSUALg, Escola Superior de Saúde da Universidade do Algarve

<sup>4</sup>CESUALg, Centro de Estudos e Desenvolvimento em Saúde da Universidade do Algarve

<sup>5</sup>ABC, Algarve Biomedical Center

<sup>6</sup>DCBM, Departamento de Medicina e Ciências Biomédicas - Universidade do Algarve

Email: alcoelho@ualg.pt

### **168 - Left ventricular false tendons and early repolarization: Preliminary study**

A Pereira<sup>1</sup>, J Castanheira<sup>2</sup>

<sup>1</sup>Clinica do Coração, Portugal

<sup>2</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

Email: nita\_pereira86@hotmail.com

### **216 - Influence of Food Education on the quality of snacks of middle school children**

D Andrade<sup>1</sup>

<sup>1</sup>Município de Soure

Email: dsandrade.nutri@gmail.com



## Sessão 4

Moderador: Professor Doutor Rui Gonçalves

### 37 - Correlation of static knee angle in kinematic and radiographic in medial knee osteoarthritis

V Ferreira<sup>1</sup>, L Machado<sup>2,6</sup>, A Vilaça<sup>3</sup>, F Xará-Leite<sup>3</sup>, P Roriz<sup>4,5,6</sup>

<sup>1</sup>Escola Superior Saúde da Universidade de Aveiro (ESSUA), Portugal

<sup>2</sup>CIF2D, Faculdade de Desporto da Universidade do Porto, Portugal

<sup>3</sup>Serviço Ortopedia Hospital Santo António, Porto, Portugal

<sup>4</sup>CIDESD-, Portugal

<sup>5</sup>INESC-TEC, Universidade do Porto, Portugal

<sup>6</sup>LABIOMEPE, Universidade do Porto, Portugal

Email: v.ferreira@ua.pt

### 66 - Relationship between lower limb asymmetries, impulsion and balance in senior football players

J Domingues<sup>1</sup>, M Castro<sup>2</sup>

<sup>1</sup>FisioCoimbra

<sup>2</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

Email: ftjoaodomingues@gmail.com

### 89 - Effects of mental practice strategies associated to physiotherapy on gait and risk of falls in Parkinson's disease: a pilot study of a randomized clinical trial

T Silva<sup>1</sup>, L Silva<sup>1</sup>, K Silva<sup>1</sup>, S Silva<sup>1</sup>, D Silva<sup>1</sup>, C Lins<sup>1</sup>, M Coriolano<sup>1</sup>

<sup>1</sup>UFPE – Universidade Federal de Pernambuco/ Programa de Pós-graduação em Gerontologia., Brazil

Email: tais.arcanjo2@hotmail.com

### 94 - Effect of a therapeutic exercise program (FisioPausa) on the quality of life of employees from CESPU

P Rocha<sup>1</sup>, F Araújo<sup>1,2</sup>, E Lafourcade<sup>3</sup>, N Callais<sup>3</sup>, M Gabriele<sup>3</sup>, S Lopes<sup>1,4</sup>

<sup>1</sup> Department of Diagnostic and Therapeutic Technologies, School of Health Vale do Sousa, Polytechnic Institute of Health Sciences (IPSN), CESPU, Gandra, Portugal

<sup>2</sup> ISPUP-EPIUnit, University of Porto, Porto, Portugal

<sup>3</sup> School of Health Vale do Sousa, Polytechnic Institute of Health Sciences (IPSN), CESPU, Gandra, Portugal

<sup>4</sup> Department of Physiotherapy, Health School, Polytechnic of Porto, Portugal

Email: sofia.lopes@ipsn.cespu.pt

### 103 - Cross-cultural adaptation and validation of the VISA-P questionnaire for Portuguese-speaking (Portugal) patients with patellar tendinopathy

P Chaves<sup>1</sup>, D Ribeiro<sup>1</sup>, J Gomes<sup>1</sup>, M Monteiro<sup>1</sup>, S Marote<sup>1</sup>, S Frutuoso<sup>1</sup>, FA Araújo<sup>2</sup>, M Paço<sup>1</sup>

<sup>1</sup>CESPU, Instituto de Investigação e Formação Avançada em Ciências e Tecnologias da Saúde, Gandra - Paredes, Portugal.

<sup>2</sup> ISPUP-EPIUnit, University of Porto, Porto

Email: maria.paco@ipsn.cespu.pt

### 105 - Cross-cultural adaptation and validation of the VISA-A questionnaire for Portuguese-speaking (Portugal) patients with Achilles tendinopathy

M Paço<sup>1</sup>, A Rodrigues<sup>1</sup>, C Oliveira<sup>1</sup>, D Carvalho<sup>1</sup>, J Ferreira<sup>1</sup>, M Simões<sup>1</sup>, FA Araújo<sup>2</sup>, P Chaves<sup>1</sup>.

<sup>1</sup>CESPU, Instituto de Investigação e Formação Avançada em Ciências e Tecnologias da Saúde, Gandra - Paredes, Portugal.

<sup>2</sup> ISPUP-EPIUnit, University of Porto, Porto, Portugal

Email: maria.paco@ipsn.cespu.pt

### 128 - Ultrasound analyses of hamstrings muscle morphology changes whit sport

R. Santos<sup>1</sup>, A. Tavares<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

Email: rutesantos@estescoimbra.pt; ana.catarina.tavares26@gmail.com

### **161 - Wearable Sensor-Based Exercise Biofeedback for Supporting Fall Prevention at Physiotherapy**

A C Martins<sup>1</sup>, D Guia<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

Email: anabelacmartins@estescoimbra.pt; daniela\_guia@hotmail.com

### **166 - Asbestos Exposure and Malignant Pleural Mesothelioma in Portugal: a scoping review**

C Santos<sup>1</sup>, MA Dixe<sup>2</sup>, E Sacadura-Leite<sup>3</sup>, P Astoul<sup>4</sup>, A Sousa-Uva<sup>5</sup>

<sup>1</sup>Escola Nacional de Saúde Pública, Universidade NOVA de Lisboa; Centro Hospitalar de Leiria, Portugal

<sup>2</sup>Instituto Politécnico de Leiria; ciTechCare, Portugal

<sup>3</sup>Departamento de Saúde Ocupacional e Ambiental da Escola Nacional de Saúde Pública, Universidade NOVA de Lisboa; CISP - Centro de Investigação em Saúde Pública; Serviço de Saúde Ocupacional do CHLN, Portugal

<sup>4</sup>Department of Thoracic Oncology, Pleural Diseases, and Interventional Pulmonology; Hôpital Nord – Aix-Marseille University, France

<sup>5</sup>Coordenador do Departamento de Saúde Ocupacional e Ambiental da Escola Nacional de Saúde Pública, Universidade NOVA de Lisboa; CISP - Centro de Investigação em Saúde Pública, Portugal

Email: catiasuzanosantos@gmail.com

### **169 - New perspectives for physiotherapy education concerning assistive technology solutions as valid options to enhance functioning and quality of life**

A C Martins<sup>1</sup>, P Francisco<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Fisioterapia, Portugal

Email: pradamanto@gmail.com

27 de junho: 16.30 h - 18.30 h

## **Sessão 5**

**Moderadora:** Professora Doutora Carla Matos Silva

### **39 - Visual dependence after vestibular rehabilitation by virtual reality in individuals with unilateral peripheral vestibular dysfunction – one year of results**

B Cunha<sup>1,2</sup>

<sup>1</sup>Hospital da Luz, Póvoa de Varzim, Portugal

<sup>2</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Audiologia, Portugal

Email: bertacunha@gmail.com

### **53 - ADHEAR in Conductive Hearing Loss: a case study**

T Marques<sup>1,2</sup>, A. Carvalho<sup>1,2</sup>, A. Miguéis<sup>3</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Audiologia, Portugal

<sup>2</sup>OuviSonus, Coimbra, Portugal

<sup>3</sup>University Clinic of Otolaryngology, Faculty of Medicine, University of Coimbra, Portugal

Email: tatiana.marques@estescoimbra.pt

### **100 - Auditory training app validation**

F Maia<sup>1</sup>, V Jesus<sup>2</sup>, C Mateus<sup>1</sup>, S Paulo<sup>2</sup>, L Marcelino<sup>2</sup>, M Serrano<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Audiologia, Portugal

<sup>2</sup>Evollu – Sensing Evolution

Email: sergio.paulo@evollu.com

### **102 - Hearing Screening in Preschool Children of a Rural Community in Portugal - A 10-year Experience**

S Fonseca<sup>1</sup>, C Reis<sup>1</sup>, L Monteiro<sup>2</sup>, C Monteiro<sup>2</sup>, M Serrano<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Audiologia, Portugal

<sup>2</sup>Hospital dos Lusíadas, Lisboa, Portugal

Email: mserrano@estescoimbra.pt

### **121 - Biomechanical Device for Strength Control in Dental Restorations**

M Esteves<sup>1</sup>, R Falacho<sup>2</sup>, M Silva<sup>1</sup>, L Roseiro<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ISEC – Instituto Superior de Engenharia de Coimbra, Portugal

<sup>2</sup>Universidade de Coimbra – Faculdade de Medicina Dentária, Portugal

Email: malesteves@hotmail.com

### **180 - Assessment of Health Literacy Levels: HLS-EU-PT versus METER**

J Luís<sup>1</sup>, C Rocha<sup>1</sup>, J Balteiro<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

Email: joananorteluis@gmail.com

### **193 - The NIH Toolbox Cognition Battery App in healthy aging and cognitive decline due to Alzheimer's Disease and Mild Cognitive Impairment**

C Marques-Costa<sup>1,2,3,4</sup>, M S Pinho<sup>2,3,5</sup>, M R Simões<sup>2,3,4</sup>, G Prieto<sup>6</sup>

<sup>1</sup>Ph.D. grant FCT [SFRH/BD/128597/2017];

<sup>2</sup>Center for Research in Neuropsychology and Cognitive and Behavioral Intervention (CINEICC), University of Coimbra, Portugal;

<sup>3</sup>Faculty of Psychology and Education Sciences, University of Coimbra (FPCEUC);

<sup>4</sup>Psychological Assessment and Psychometrics Laboratory (PsyAssessmentLab), University of Coimbra, Portugal;

<sup>5</sup>Memory, Language and Executive Functions Laboratory, University of Coimbra, Portugal;

<sup>6</sup> Faculty of Psychology, University of Salamanca, Spain.

Email: marquescosta.cm@gmail.com

## **Sessão 6**

**Moderadora: Professora Doutora Ana Lúcia Baltazar**

### **77 - Repercussions of a very active life style in body composition and cardiometabolic parameters of the elderly in a sample of the population of the mid region of the city of recife/Brazil**

J Coriolano<sup>1,2</sup>, W Queiroz<sup>2</sup>, K Andrade<sup>2</sup>, M Coriolano<sup>3</sup>

<sup>1</sup>UniFBV / Wyden

<sup>2</sup>Conselho Regional de Educação Física – CREF 12 PE

<sup>3</sup>Universidade Federal de Pernambuco / Programa de Pós-Graduação em Gerontologia - PPGERO

Email: jgcoriolano@hotmail.com

### **96 - Effects of endurance and strength exercises associated with whey protein supplementation on quality of life (SF36) in community-dwelling seniors**

H Loureiro<sup>1,2</sup>, M Pocinho<sup>1</sup>, A Faria<sup>1</sup>, J Azenha<sup>1</sup>, M Silva<sup>2</sup>, R Martins<sup>2</sup>, M Veríssimo<sup>2,3</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Dietética e Nutrição, Portugal

<sup>2</sup>Faculty of Sport Sciences and Physical Education, Coimbra, Portugal

<sup>3</sup>Hospital of University of Coimbra, Coimbra, Portugal

Email: helenasoaresl@gmail.com

### **167 - Whey protein supplementation in muscle hypertrophy**

C Sobral<sup>1</sup>, D Gomes<sup>1</sup>, M Silva<sup>1</sup>, P Martins<sup>1</sup>, A Baltazar<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

Email: crisbsobral@live.com.pt

### **182 - Blueberries effects in experimental diet-induced prediabetes: a focus on renal impairment**

A Alves<sup>1,2</sup>, I Preguiça<sup>1,2</sup>, A Barbosa<sup>1,2</sup>, P Vieira<sup>1,2,3</sup>, D Martins<sup>3,4</sup>, S Nunes<sup>1,2,5</sup>, S Viana<sup>1,2,3</sup>, F Reis<sup>1,2</sup>

<sup>1</sup> Institute of Pharmacology & Experimental Therapeutics & Coimbra Institute for Clinical and Biomedical Research (ICBR), Faculty of Medicine, University of Coimbra, Portugal

<sup>2</sup> Center for Innovative Biomedicine and Biotechnology (CIBB), University of Coimbra, Portugal

<sup>3</sup> Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Farmácia/Ciências Biomédicas Laboratoriais, Coimbra, Portugal

<sup>4</sup> i3S - Institute for Research and Innovation in Health, University of Porto, Porto, Portugal;

<sup>5</sup> Faculty of Pharmacy, University of Coimbra, Portugal

Equally contributed

Email: alves.andrefb@gmail.com

### **185 - Body composition and eating habits of workers with normal day and shift work**

A Martins<sup>1</sup>, J Lima<sup>1,2,3,4</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

<sup>2</sup>GreenUPorto, Portugal

<sup>3</sup>CiTechCare, Leiria, Portugal

<sup>4</sup>LAQV-Requimte, Porto, Portugal

Email: anacatarinavieira@live.com.pt

### **221 - Relationship of salt added during preparation and salt intake of cooks**

D Santos<sup>1</sup>, J Lima<sup>2</sup>, JP Figueiredo<sup>2</sup>, A Rocha<sup>1</sup>

<sup>1</sup>FCNAUP – Faculdade de Ciências da Nutrição e Alimentação da Universidade do Porto

<sup>2</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

Email: danielaalmeidasantos@hotmail.com

## **Sessão 7**

**Moderador: Professor Helder Simões**

### **46 - Patient Safety in Primary Care**

V. Pedrosa<sup>1,2</sup>

<sup>1</sup> School of Health Sciences, Polytechnic of Leiria, Portugal

<sup>2</sup> Center for Innovative Care and Health Technology, Portugal

Email: vanda.varela@ipleiria.pt

### **87 - Shift Work: Work ability and quality of life of professionals from IPSS**

J.Rito<sup>1</sup>, J Pereira<sup>1</sup>, JP Figueiredo<sup>1</sup>, T Cotrim<sup>2</sup>, H Simões<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

<sup>2</sup>Faculdade de Motricidade Humana – Universidade de Lisboa, Portugal

Email: jota.rito@gmail.com

### **101 - Twelve-week multimodal programs can improve dual-task performance in risk factors for falls in community-dwelling older adults: a pilot study**

H Rosado<sup>1</sup>, J Bravo<sup>1</sup>, A Raimundo<sup>1</sup>, F Mendes<sup>2</sup>, C Pereira<sup>1</sup>

<sup>1</sup>Departamento de Desporto e Saúde, Escola de Ciências e Tecnologia, Universidade de Évora, Portugal

<sup>2</sup>Escola Superior de Enfermagem São João de Deus, Universidade de Évora, Portugal

Email: hrosado@uevora.pt

### **125 - Associations of socioeconomic and health related factors with fall risk on community dwelling older adults from Alentejo**

A Jerônimo<sup>1</sup>, M Santos<sup>1</sup>; S Picamilho<sup>1</sup>, M Caldas<sup>1</sup>; C Pereira<sup>1,2</sup>

<sup>1</sup>Departamento de Desporto e Saúde, Escola de Ciências e Tecnologia, Universidade de Évora, Évora, Portugal

<sup>2</sup> CHRC - Comprehensive Health Research Centre, Portugal

Email: alineafje@gmail.com

### **158 - Exergaming as a tool to enhance strength, balance, gait, mobility, participation, self-efficacy for exercise and adherence in older adults**

A C Martins<sup>1</sup>, J Quatorze<sup>1</sup>, D Guia<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC - Coimbra Health School, Fisioterapia, Portugal

Email: anabelacmartins@estescoimbra.pt

### **159 - Effect of wearable sensor-based Otago Exercise Program biofeedback in older adults with moderate to high risk of falling**

A C Martins<sup>1</sup>, D Francisco<sup>1</sup>, D Guia<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC - Coimbra Health School, Fisioterapia, Portugal

Email: anabelacmartins@estescoimbra.pt

## 217 - Association between functional physical fitness and health status of the elderly

A Batista<sup>1</sup>, G Flores<sup>1</sup>, S Carvalho<sup>1</sup>, M Sampaio<sup>1</sup>, C Patrício<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

Email: cpatricio@estescoimbra.pt

### Sessão 8

Moderador: Professor Doutor João Paulo Figueiredo

## 49 - Healthy Cities to Healthy People: a Grid Application to Assess the Potential of Ecosystems Services of Public Urban Green Spaces in Porto, Portugal

D Vidal<sup>1</sup>, C Fernandes<sup>2</sup>, L Viterbo<sup>1</sup>, N Barros<sup>1</sup>, R Maia<sup>1</sup>

<sup>1</sup>University Fernando Pessoa, UFP Energy, Environment and Health Research Unit, Portugal

<sup>2</sup>Faculty of Sciences of the University of Porto, Research Center in Biodiversity and Genetic Resources, Portugal

Email: diogoguedesvidal@hotmail.com

## 79 - The immediate effect of vocal technique associated with virtual reality game in people with Parkinsons disease

T Cruz<sup>1,2,3</sup>, M Coriolano<sup>1,2,3</sup>, H Silva<sup>1,2</sup>, A Gomes<sup>1,2</sup>, Z Lira<sup>1,2,3</sup>

<sup>1</sup>Universidade Federal de Pernambuco UFPE, Brazil

<sup>2</sup>Programa de Pós-Graduação em Saúde da Comunicação Humana UFPE, Brazil

<sup>3</sup>Programa de Extensão Pró-Parkinson UFPE, Brazil

Email: zulinalira@gmail.com

## 129 - Cybersecurity risk analysis in healthcare institutions

P Nunes<sup>1</sup>, M Antunes<sup>2,3</sup>, C Silva<sup>2,4</sup>

<sup>1</sup>Lisbon School of Health Technology (ESTeSL) - Polytechnic Institute of Lisbon (IPL); Portugal.

<sup>2</sup>School of Technology and Management – Polytechnic Institute of Leiria; Portugal

<sup>3</sup>CRACS/INESC-TEC – University of Porto; Portugal.

<sup>4</sup>CEAUL | Centre of Statistics and its Applications – Faculty of Sciences of the University of Lisbon, Portugal

Email: 6490@alunos.estesl.ipl.pt

## 164 - eLearning Technologies on the follow-up of Young People with Chronic Diseases

J Pascual<sup>1</sup>, S García<sup>1</sup>, I Pedrosa<sup>1</sup>, I Lapuente<sup>2</sup>, B Lapuente<sup>3</sup>, A Delgado<sup>2</sup>, D Azema<sup>4</sup>, A Raupp<sup>5</sup>, M Oliveira<sup>6</sup>, A Berthier<sup>7</sup>, S Bastier<sup>7</sup>, Y Lapeyre<sup>7</sup>, P Teixeira<sup>8</sup>

<sup>1</sup>Fundación CTIC, Centro Tecnológico, Asturias, Spain

<sup>2</sup>Servicio Cántabro de Salud, Cantabria, Spain

<sup>3</sup>Instituto de Investigación Sanitaria Valdecilla, Cantabria, Spain

<sup>4</sup>creSco – Université Paul Sabatier, Toulouse, France

<sup>5</sup>Association de prise en Charge Concertée des Obésités en Midi- Pyrénées (ACCOMIP-RéPPOP), Toulouse, France

<sup>6</sup>Future Balloons, Figueira da Foz, Portugal

<sup>7</sup>MEDES, Toulouse, France

<sup>8</sup>Universidade do Minho, Braga, Portugal

Email: future.balloons@gmail.com

## 172 - Accessible communication in the transport of non-urgent people with communication impairments

EM Soares<sup>1,2</sup>, T Granjo<sup>1</sup>, S Monteiro<sup>1</sup>, S Bemposta<sup>1</sup>, A Salvador<sup>1,3</sup>

<sup>1</sup>Politécnico de Leiria, ESSLei – School of Health Sciences, Portugal

<sup>2</sup>ciTechCare - Center for Innovative Care and Health Technology, Leiria, Portugal

<sup>3</sup>CIEd – Research Centre on Education, Braga, Portugal

Email: andrea.salvador@ipleiria.pt; elsa.soares@ipleiria.pt

## 201 - Big data and machine learning in health

D Carvalho<sup>1</sup>, R Cruz<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

Email: ruic@estescoimbra.pt

## 213 - Assessing fitness to drive: Knowledge and practices from medical doctors and psychologists

I Ferreira<sup>1,2</sup>, S Gonçalves<sup>3</sup>, P Almiro<sup>2,4</sup>

<sup>1</sup>Universidade Europeia, Portugal

<sup>2</sup>Laboratório de Avaliação Psicológica e Psicometria (PsyAssessment Lab) e Centro de Investigação em Neuropsicologia e Intervenção Cognitivo-Comportamental (CINEICC) da FPCEUC, Portugal

<sup>3</sup>Hospital de Magalhães Lemos, EPE, Unidade Funcional de Psiquiatria e Psicologia Forense, Portugal

<sup>4</sup>Universidade Autónoma de Lisboa, Centro de Investigação em Psicologia (CIP-UAL), Portugal

Email: ines.ferreira@universidadeeuropeia.pt

## PÓSTERES

*(por ordem crescente de ID)*

## 18 - The potential of chronotherapy for rheumatoid arthritis: a review of the literature

MJ Costa<sup>1</sup>, AF Mendes<sup>1,2</sup>

<sup>1</sup>Faculty of Pharmacy, University of Coimbra, Portugal

<sup>2</sup>Center for Neuroscience and Cell Biology, University of Coimbra, Portugal

Email: [mariajbac@outlook.pt](mailto:mariajbac@outlook.pt)

### Introduction

Patients with rheumatoid arthritis (RA) experience more prominent symptoms in the early morning. These daily fluctuations are correlated with the disruption of circadian regulation of immune, neuroendocrine and inflammatory processes. Synchronization of drug administration with the circadian rhythms of RA, termed chronotherapy, is emerging as a feasible approach to enhance treatment efficacy.

### Objectives

To review current knowledge on RA chronobiology and the evidence supporting the potential of chronotherapy for its pharmacological management.

### Methodology

PubMed database was searched based on a range of key terms including rheumatoid arthritis, chronobiology, chronotherapy, glucocorticoids, DMARDs and NSAIDs. Posteriorly, the reference section of each article was explored in order to find additional information. Only clinical studies from 2008 onward were included.

### Results

Modified-release formulations of different drugs used in RA therapy have been developed to allow bedtime administration with release and onset of action at early morning, preceding the night surge of the inflammatory cascade. 19 clinical studies testing modified versus immediate release formulations of GC, DMARDs and NSAIDs were identified. Of those, 17 found the modified release formulations to be superior, both in terms of efficacy and safety, while in 1 study although efficacy was superior, the safety profile was a matter of concern. The only exception was reported for administration of tacrolimus which was more effective when administered during early morning.

### Conclusion

A strong body of evidence supports the superior efficacy and safety of chronotherapy for RA, thus favoring its use as a strategy to improve patients' pharmacological therapy. Nonetheless, those studies also emphasize the importance of tailoring chronotherapy regimens to each patient's chronotype and drug, in order to optimize therapy and improve quality of life.

**Keywords:** Rheumatoid arthritis, chronobiology, circadian rhythms, chronotherapy, treatment efficacy



## 27 - A New Model for Health at Work: Occupational Health Care Systematization (OHCS)

LM Viterbo<sup>1,2</sup>, AS Costa<sup>1,2</sup>, DG Vidal<sup>1</sup>, MA Dinis<sup>1</sup>

<sup>1</sup>UFP Energy, Environment and Health Research Unit, University Fernando Pessoa, Portugal

<sup>2</sup>Universidade Cooperativa, Brasil

Email: [diogoguedesvidal@hotmail.com](mailto:diogoguedesvidal@hotmail.com)

### Introduction

OHCS is based on the “Person Centred Healthcare” approach, using the “Plan, do, check and act” management tool, the “Systematization of Nursing Care” model, the “Interdisciplinary Workers Health Approach Instrument”, the “Worker’s Health Risk Index”, and health taxonomies, as theoretical references.

### Objectives

The OHCS aims the articulated, intersectoral and interdisciplinary systematization in occupational health (OC), based in an adequate methodology to achieve integral and integrated health care.

### Methodology

The “Process” term makes it possible to identify, describe, explain and/or predict the needs of the human person, family or community at a given time in the context of health and disease process. OHCS presumes a conception of workers health (WH), its potentiality to transform or to be transformed. The potentiality of this interdisciplinary intervention is wide and constitutes an embryo of transformation in the OC theoretical-practical model.

### Results

OHCS comprises seven steps: data collection, aimed at identifying health problems, as well as targeted recording of worker’s needs; diagnostic mapping, contemplating the use of taxonomies that cover the complexity of the WH field, particularly related to the health, environment and work triad; intervention planning, where each mapped diagnostic generates an intervention; interdisciplinary validation, consisting of a discussion of the interdisciplinary health team to validate the impressions collected during the consultations; implementation of the care plan, that consists in implementing the proposed actions through interdisciplinary care, group work, collective and environmental interventions; and the evolution that monitors the effectiveness of the implemented health interventions.

### Conclusion

OHCS places the worker at the centre of care, respecting their needs and autonomy, providing quality health care and contributing to integrated global WH.

**Keywords:** interdisciplinary approach; person centred healthcare; workers health; health management

## 28 - The Effectiveness of the use of Light Technologies in the Health Profile Change of Workers with Chronic Conditions in a Brazilian Oil Industry

AS Costa<sup>1,2</sup>, LMF Viterbo<sup>1,2</sup>, IB Silva<sup>2</sup>, SO Nascimento<sup>2</sup>, DG Vidal<sup>1</sup>, MAP Dinis<sup>1</sup>

<sup>1</sup>UFP Energy, Environment and Health Research Unit, University Fernando Pessoa, Portugal

<sup>2</sup>Universidade Cooperativa, Brasil

Email: diogoguedesvidal@hotmail.com

### Introduction

Light technologies (LT) refer to relationships of attachment, reception and management of work processes.

### Objectives

This work intends to analyse the impact of the use of LT in the monitoring of workers with chronic conditions (CC), aiming to improve the health risk factors after periodic annual occupational health assessments in a Brazilian oil industry.

### Methodology

A total of 1,122 workers were evaluated from February 2018 to March 2019 and 52 subjects were classified as priority for health risk management. Tools indicated in the assistance to patients with CC were used: "Scale to Assess the Capabilities of Self-care", "Dyslipidemic Knowledge Scale Questionnaire", "Diabetes Knowledge Scale Questionnaire", "Hypertension Knowledge Scale Questionnaire" and the "Screening Test for Alcohol-related Problems", were used. The 5As methodology - Assessment, Counselling, Agreement, Assistance and Follow-up - was applied during follow-up consultations. Health care took place under the logic of the production of comprehensive care, which strengthens sensitive listening, attachment, mutual respect and autonomy. These interventions are oriented to the adoption of healthy habits and adherence to self-care, making workers social producers of their own health. Prioritized workers were followed, on average, after 3 months of periodic annual assessment by an interdisciplinary team, with prepared individualized care plans.

### Results

52 workers were reassessed 9 months after the health intervention, with an improvement in health risk factor control in 29 workers (55.8%) based on behavioural changes in the follow-up period.

### Conclusion

The results demonstrate the relationship between the control and prevention of chronic diseases, suggesting that the use of LT may enhance care production, autonomy and strengthening of attachment.

**Keywords:** light technologies; chronic conditions; person-centred approach; health risk factors

## 29 - An Innovative Tool to Assess Worker's Potential Health Risk: The Worker's Health Risk Index (WHRI) Applied to an Oil Industry in Brazil

LMF Viterbo<sup>1,2</sup>, MAP Dinis<sup>1</sup>, DG Vidal<sup>1</sup>, AS Costa<sup>1,2</sup>, PVG Oliveira<sup>3</sup>, JG Nascimento<sup>4</sup>, H Simões<sup>5</sup>

<sup>1</sup>UFP Energy, Environment and Health Research Unit, University Fernando Pessoa, Portugal

<sup>2</sup>Universidade Cooperativa, Brasil

<sup>3</sup>Faculdade Área 1, Brasil

<sup>4</sup>Instituto Federal da Bahia, Brasil

<sup>5</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

Email: diogoguedesvidal@hotmail.com

### Introduction

Healthy workers have a direct and quantifiable positive impact on productivity. Risk stratification of health system users is a central element of the health management of a population. Risk Pyramid Model (RPM) operationalizes the risk stratification of non-acute chronic conditions, defining intervention strategies for self-care and professional care. Although RPM is a relevant model for stratifying populations in risk ranges, RPM theoretical frameworks do not describe the methodology determining health risk classes.

### Objectives

This study aimed to assess the worker's health (WH) risk in work context, based on the application of the WHRI in the oil extraction and production industry in Bahia, Brazil.

### Methodology

Data were collected during the annual occupational assessment by professionals of medicine, nursing, nutrition, dentistry and physical education. All attendance was performed in an integrated, single shift and lasted an average of 40 min with each professional. The Interdisciplinary Worker's Health Approach Instrument was used for data collection purposes. Variable names were standardized, as well as a randomly generated code was created to ensure anonymity of study participants. The Chi-square test was applied ( $\alpha = 5\%$ ) to identify associations between variables.

### Results

The results indicate that WHRI is higher in men, aged above 50 years old and with low education ( $p < 0.001$ ). 74% of the participants are in the "Low", 21% in the "Moderate" and 5% in the "High" risk ranges. High-risk workers are also those with diabetes mellitus, triglycerides, altered glycemia and hypertension, poor oral hygiene and periodontal condition, smoking, less physically active (all with  $p < 0.05$ ), and higher levels of abstentionism.

### Conclusion

WHRI major contribution is to make available a useful tool for the identification of WH risk, contributing to define clearer health promotion, prevention and intervention policies in the context of WH.

**Keywords:** Occupational health; Worker's health risk index; Sustainable working conditions

## 38 - Prevention of breast cancer in women in Algarve

A.Branco<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

Email: [arianasbranco@hotmail.com](mailto:arianasbranco@hotmail.com)

### Introduction

Breast cancer (BC) is the most common cancer in women. There are several risk factors. The clinical examination of choice for BC detection is mammography. There is a national BC screening program (BCS), more than 3 million mammograms have been performed and about 16,000 women referred for treatment. In Algarve the latest known data was collected in 2014 and the results were already concerning at the time. In 2014 about 30000 mammograms were performed, 517 positive and 127 were malignant tumors.

### Objectives

This study aims to understand if after 2014 the Algarve continued to have support from the BCS, if there was an increase in incidence. Aims to establish how many women underwent early diagnosis.

### Methodology

500 questionnaires were conducted in Algarve on women over 18 years old. The questionnaire aimed to understand the age, education, municipality of the Health Center, if the candidate had access to a family doctor, whether or not they had undergone BCS, which exams were performed, what the results were and which treatment was performed. After collecting the questionnaires a database was created in the IBM SSP and the results analyzed.

### Results

Of the respondents, 31.7% have completed secondary education. Our results showed that 72.4% of respondents had a family doctor. Only 66.7% had ever had BC screening. The 50.8% underwent the first screening before age 45. The most recurrent exams were mammography with breast, axillary palpation and ultrasound, which corresponds to 30.9%. Of the total respondents only 2.4% had a positive diagnosis. The most common treatment was surgery followed by radiotherapy.

### Conclusion

This study has shown that the Algarve is adequately prepared for early BC detection. It can be concluded that the incidence of BC is small, but women with BC wait about 2-6 months to start treatment, which can be worrying. We can also see that having a family doctor does not influence the performance of the BCS, that most screenings are performed before age 45.

**Keywords:** Promotion disease, epidemiology, breast cancer

## 45 - Teacher's Class Management Program, one Portuguese Experience in the Community

V Varela Pedrosa<sup>1,2</sup>

<sup>1</sup>Escola Superior de Saúde do Politécnico de Leiria, School Health Sciences, Portugal

<sup>2</sup>Center for Innovative Care and Health Technology (ciTeChare)

Email: vanda.varela@ipleiria.pt

### Introduction

The Degree of Occupational Therapy (OT) of the Higher School of Health Sciences (ESElei) of the Polytechnic Institute of Leiria (IPLeiria) in Portugal, promotes the Gulbenkian Academies of Knowledge, sponsored by Calouste Gulbenkian Foundation.

### Objectives

We aim to improve social and emotional skills in young children from 3 to 8 years old, building resilient children in ESSLei adjacent community, in Leiria and Porto de Mós field

### Methodology

We will invest and qualifying the teacher's, those that everyday strengthens is classroom. The team will be formed by up to 14 elements, ESSLei teachers, elements from Porto de Mós & Leiria Autarchy, Private Social Solidarity Institutions from coverage área. This team will disseminate for free the methodology, one theoretical-practical model, divided in 84 hours (42 in classroom more 42 practical in classrooms). In total they are 7 Workshops offered for free to public institutions.

### Results

We aim to share results from implementation-october 2018-March 2020. At the same time we are pleased to share a good & resilient practice. By now we already formed 33 educators and reach directly near 1200 childrens, devolping resilience, problem solving, criativity, better communication.

### Conclusion

By the time of the conference, we will have more results, from a practical methodology that is working nearly with Teachers, enhancing resilience, strategies for enhancing soft skills, community resilience. The promotion of soft skills, in theory and with our practical experience is the future of primary care & health promotion.

**Keywords:** Resilience Multidisciplinary approach Health Promotion

## 47 - Intervention of the Occupational Therapist in the Changes of the Occupational Performance of Newborn Pre-Term in Intensive Neonatal Therapy Unit

A Fagundes<sup>1</sup>, A Santos<sup>1</sup>, J Melo<sup>1</sup>, R Costa<sup>1</sup>, V Varela Pedrosa<sup>1,2</sup>

<sup>1</sup> *Escola Superior de Saúde do Politécnico de Leiria, School HealthSciences, Portugal*

<sup>2</sup> *Center for Innovative Care and Health Technology (ciTeChare)*

*Email: vanda.varela@ipleiria.pt*

### Introduction

A newborn born less than 37 weeks gestational is considered a preterm newborn. In this sense, the occupational therapist who exhibits a holistic view about it, intends to enhance their occupational performance and improve their quality of life.

### Objectives

To describe the performance of Occupational Therapy (OT) with the preterm newborn in Neonatal Intensive Care Units (NICUs), responding to the scarcity of information on the subject at the national level, and the need for occupational therapists in this context.

### Methodology

The study uses as a method of data collection a semi-structured interview conducted to an occupational therapist that participates in a NICU in mainland Portugal and as a method of data analysis WebQDA software. It has a qualitative approach, it is a descriptive and exploratory study, taking into account the general objective, and it is assumed as a case study, by the technical procedures used.

### Results

When identifying and analyzing the information related to the research question, we can affirm that during the interview the occupational therapist emphasized the intervention of OT in Sensory Modulation and Guidance to Caregivers of the Preterm Newborn.

### Conclusion

In order to optimize the whole intervention, and as a main conclusion, the importance of the caregivers participation in the OT intervention process is emphasized, which is done under the guidance of the therapist, making the approach of this professional indirect.

**Keywords:** Newborn Preterm, Occupational Therapy, Neonatal Intensive Therapy Units.

## 48 - The Acting of Occupational Therapy in Community, Early Childhood

V Varela Pedrosa

<sup>1</sup>Escola Superior de Saúde do Politécnico de Leiria, School HealthSciences, Portugal

<sup>2</sup>Center for Innovative Care and Health Technology (ciTeChare)

Email: vanda.varela@ipleiria.pt

### Introduction

The child and the family with special needs and doubts need to be monitored, supervised, given greater attention, to develop skills and abilities, and greater autonomy. The importance of TO inserted in a team in the context of early intervention in childhood and school is already recognized and studied, but still few, when it is reflected on the intervention in the community.

### Objectives

The purpose of the compilation is to reflect on the follow-up practices of OT in the Primary Health Care, in early childhood.

### Methodology

The reading of the data reports, in the middle of the hours of an OT in the Primary Health Care, 17 hours. The results are numerical / descriptive, have a non-experimental, retrospective, longitudinal nature, between March 2005 and March 2016. The service does not have a validated information system, the data were taken from excel sheets.

### Results

A total of 253 different children / young people, with at least 1 h or more of care, between 0 months and 18 years, 74.3% between 1 month and 6 years of age and 25.7% among the 7 and 12 years old included, 58.1% of the male gender and 41.9% of the female gender. Requests came from the community, with the family also signaling.

### Conclusion

The children were mostly referred at early ages, due to Communication and Relationship Disturbance, and difficulties in Social Interaction with no known etiology. It is indispensable to follow up the TO in the Primary Health Care. In the community, non-care is a necessity.

**Keywords:** Occupational Therapy; Primary Care; Early Childhood Intervention.

## 54 - Medication use in the course of 12 weeks of wearing lateral wedge insole in patients with medial knee osteoarthritis

V Ferreira<sup>1</sup>, L Machado<sup>2</sup>, A Vilaça<sup>3</sup>, F Xará-Leite<sup>3</sup>, P Roriz<sup>4</sup>

<sup>1</sup>Escola Superior de Saúde, Universidade de Aveiro (ESSUA), Portugal

<sup>2</sup>CIF2D, LABIOMEPE, Faculdade de Desporto da Universidade do Porto, Portugal

<sup>3</sup>Serviço Ortopedia Hospital Santo António, Porto, Portugal

<sup>4</sup>CIDESD-ISMAI, INESC-TEC, LABIOMEPE, Portugal

Email: [v.ferreira@ua.pt](mailto:v.ferreira@ua.pt)

### Introduction

Lateral wedge insole (LWI) is a device inserted in the shoes which aim to reduce the symptoms in patients with medial knee osteoarthritis. Some studies indicate to a reduction in medication after the use of LWI.

### Objectives

The aim of this study was to determine whether the use of lateral wedge insoles for 12 weeks altered the use of pain medication for the knee OA.

### Methodology

A randomized control trial was performed. Participants were informed that we are testing different types of insoles and they will be blinded to the types of insoles or their biomechanical effects. At the baseline assessment were allocated to the experimental or control group using block-randomization sequences. Participants in the experimental group wore a biomechanically adjusted LWI for 12 weeks and in control group wore a neutral insole. Participants were assessed on medication for knee symptomatology at the baseline and at the follow-up.

### Results

This study includes 38 patients (23 females; mean age  $61,6 \pm 8,4$ ; weight  $75,8 \pm 12,7$  kg, and height  $161 \pm 9,2$  cm) with diagnosed radiographic medial knee OA. Thirty-one (lateral wedge insoles, 80%; control insoles, 83%) completed the trial. At baseline 17.6% of participants used knee pain medication in the control group and 60% in the experimental group. At the follow-up 26.7% of participants used medication in the control group and 56.3% in the experimental group.

### Conclusion

The use of lateral wedge insoles was not effective in reducing medication for knee symptomatology in osteoarthritis.

**Keywords:** Knee; osteoarthritis; lateral wedge insole; medication; RCT.



## 55 - Correlation between epicardial fat and clinical, anthropometric and echocardiographic parameters of an elderly population

C Nunes<sup>1</sup>, J Castanheira<sup>1</sup>, T Pereira<sup>1</sup>, J Conde<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

Email: cristiananunes.97@gmail.com

### Introduction

Epicardial fat is a component of visceral fat that is distributed around the heart, which has been considered an important predictive marker of cardiovascular and metabolic risk. There is a wide individual variation in the quantity and distribution of epicardial fat, a fact attributable to the clinical and demographic characteristics of the individuals.

### Objectives

With the present study we intend to echocardiographically characterize the heart of an elderly population and study the relation between epicardial fat and clinical, anthropometric and echocardiographic parameters.

### Methodology

This work is co-financed by the European Regional Development Fund (ERDF), through the partnership agreement Portugal 2020 - Regional Operation Program CENTRO 2020, under the project CENTRO-01-0145-FEDER-023369 AGA@4life: AGA - Comprehensive Geriatric Approach to promote an active and healthy aging - implementation of an integrated and multidisciplinary intervention program. The study population consisted of 34 individuals, 9 men and 25 women, aged between 64 and 92 years, who attend an IPSS of the town of Lousã. A standardized sociodemographic questionnaire, an anthropometric and echocardiographic evaluation and a blood pressure measurement were performed.

### Results

The epicardial fat thickness ranged from 4 to 9 mm, with the highest values being registered in men as opposed to women, and correlated significantly with weight ( $r=0.4$ ;  $p=0.02$ ), body surface area ( $r=0.4$ ;  $p=0.02$ ), lean mass ( $r=0.4$ ;  $p=0.03$ ), circumference of the leg ( $r=0.5$ ;  $p=0.01$ ), left ventricular end-diastolic diameter ( $r=0.3$ ;  $p=0.04$ ), maximum velocity of the transpulmonary flow ( $r=0.4$ ;  $p=0.02$ ) and maximum velocity of the mitral septal A ( $r=0.3$ ;  $p=0.05$ ) and tricuspid A ( $r=0.3$ ;  $p=0.04$ ) waves. In the remaining correlations there weren't found any statistically significant results ( $p>0.05$ ).

### Conclusion

Epicardial fat thickness is correlated with some of the studied anthropometric and echocardiographic parameters.

**Keywords:** Aging; Epicardial fat; Echocardiography.

## 56 - Correlation between epicardial fat and clinical, anthropometric and echocardiographic parameters of an elderly population

C Beatriz<sup>1</sup>, M Ana<sup>1</sup>, L João<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

Email: [beatriz.curado@hotmail.com](mailto:beatriz.curado@hotmail.com)

### Introduction

The Mediterranean dietary pattern is considered as a balanced diet and it is recommended as dietary standard to prevent chronic diseases, increasing quality of life and it's also associated with a lower prevalence of overweight and obesity. However, in recent years, this dietary pattern has been less prevalent in Mediterranean countries.

### Objectives

To determine if adherence to Mediterranean dietary pattern translates into the level of anthropometric parameters in higher education students, both in Portugal and Poland.

### Methodology

This study included individuals from two similar higher education institutions, aged between 18 and 25 years. Data from the present study was collected through a questionnaire, which included PREDIMED and performing anthropometric measurements using a bio impedance scale.

### Results

A low adherence to Mediterranean dietary pattern was observed. However, good adherence to Mediterranean dietary pattern was higher in Portugal (5.2%) compared to Poland (3.3%), although no statistically significant differences were found between countries. In addition, there is an inversely relationship between Mediterranean dietary pattern adherence and percentage of fat mass. No differences were observed for percentage of fat mass according nationality.

### Conclusion

Low adherence to Mediterranean dietary pattern and the relationship with fat mass in both countries contributes to consider essential the development of additional research in this area, and the implementation of appropriate intervention strategies.

**Keywords:** Mediterranean dietary pattern, higher education students, anthropometric parameters.

## 59 - Influence of Soccer Training According to a Tactical Periodization Protocol in Proprioception of the Knee

B Barros<sup>1</sup>, P Rocha<sup>1</sup>, F Araújo<sup>1,2</sup>, G Brochado<sup>1</sup>

<sup>1</sup> CESPU, North Polytechnic Institute of Health

<sup>2</sup> ISPUP-EPIUnit, University of Porto, Porto, Portugal.

Email: [gabriela.brochado@ipsn.cespu.pt](mailto:gabriela.brochado@ipsn.cespu.pt)

### Introduction

Exercise in elite athletes improve their performance by means of increased proprioception and consequently decreases their risk of traumatic injury. However, inadequate training progression can have a reverse impact among these athletes.

### Objectives

Evaluate the efficacy of a Periodisation Training Focused on Technical-Tactical Ability in terms of sense of articular position of flexion of the knee in soccer players.

### Methodology

“Periodização Tática by Vítor Frade<sup>®</sup>” is a innovative methodology aiming to develop the necessary competences for competition. The protocol was implemented during 2018/19 season in 19 elite soccer players of a Portuguese team. Protocol started at 18th September and occurred during 13 consecutive weeks (65 interventions). Participants (age range:19-33 years) were evaluated daily during weeks 1, 6, 10 and 13, before and after training. Active knee-position sense error was measured at 30° and 60° degrees of flexion through right-side photographs in the sitting position. Three trials have been made to each one of the target knee-position and the mean of errors was used.

### Results

There were no statistical differences between positional errors before and after trainings within each one of the four weeks of assessment. However, a gradual decrease in errors occurred from week 1 to week 13, in both target positions of knee flexion. At 30° degrees, errors of positional sense decreased essentially after training (Before:0.8°, Effect Size=2.09, p=0.082; After:1.5°, ES=4.68,p<0.001), while at position of 60° of flexion it decreases with statistical significance in both time evaluations: before training error declines 2.8°, corresponding to ES=5.47 (p<0.001) and after training it reduces in 2.9° (ES=3.37, p=0.001).

### Conclusion

We have shown that a standardised training periodisation methodology was effective in improving joint position sense, one of the best clinical proxy of trauma-related knee disorders in soccer players.

**Keywords:** ABSOLUTE ERROR, JOINT POSITION SENSE, SPORTS, TRAINING METHODOLOGY.

## 60 - Impact of continuous glucose monitoring in type 1 diabetes patients

A Vieira<sup>1</sup>, AG Silva<sup>1,2</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ISCAC – Coimbra Business School, Portugal

<sup>2</sup>CEISUC Portugal

Email: alexmfgs@gmail.com

### Introduction

Diabetes requires constant monitoring of blood glucose values, leading to permanent analysis of a set of data. Since January 2018, the SNS (Portuguese National Health System) assumed partial payment for the monitoring devices. This can set the understanding on the effectiveness or progress in diabetes control using the new methods for glucose monitoring.

### Objectives

The interest of the study is to obtain analytic data that provides answers to the following concern: “The introduction of flash monitoring systems, by the SNS co-payment, despite outgoings, may improve blood glucose monitoring, improve HbA1c test results and quality of life perception for the patients.

### Methodology

The investigation methods were, primary general research papers, then survey data analysis. The survey included questions from the DQOL - Diabetes Quality of Life Survey, adjusted to the study.

### Results

By implementing the flash glucose monitoring, both the SNS and patients spend more money than with the previous methods. For the SNS it represents, on average, an annual direct increase of 60%. For the patient it represents an increase around 90% of the spending every year with glucose monitoring. The association between the “improvement in the quality of life” and “satisfaction with flash monitoring”, shows that the increase in quality of life corresponds mostly to levels of satisfaction ranging from normal to high.

### Conclusion

There is a strong correlation between the HbA1c test values with the new monitoring methods, which confirms that those who use sensors have improvements in this indicator. Regardless of direct increase costs by the parts involved, the benefits are obvious. By analysing the partial DQOL survey, patients consider that there was an increase in quality of life in all aspects. The results also indicates that, using sensors, there is a connection between the quality of life and the level of satisfaction.

**Keywords:** Quality of Life, flash glucose monitoring.

## 61 - Work-related factors influencing return to work of cancer survivors: a cross-sectional survey in Italy

Paltrinieri S<sup>1</sup>, Vicentini M<sup>2</sup>, Mancuso P<sup>2</sup>, Mazzini E<sup>3</sup>, Giorgi Rossi P<sup>2</sup>, Costi S<sup>4,5,6</sup>.

<sup>1</sup>Physical Medicine and Rehabilitation Unit, Azienda USL – IRCCS di Reggio Emilia, Italy

<sup>2</sup>Epidemiology Unit, Azienda USL – IRCCS di Reggio Emilia, Italy

<sup>3</sup>Medical Directorate, Azienda USL – IRCCS di Reggio Emilia, Italy

<sup>4</sup>Scientific Directorate, Azienda USL – IRCCS di Reggio Emilia, Italy

<sup>5</sup>Surgical, Medical and Dental Department of Morphological Sciences related to Transplants Oncology and Regenerative Medicine, University of Modena and Reggio Emilia, Italy

<sup>6</sup>Department of Neuroscience, Rehabilitation, Ophthalmology, Genetics and Maternal Child Health, University of Genova, Italy.

Email: Sara.Paltrinieri@ausl.re.it

### Introduction

Return to work (RTW) process of cancer survivors (CSs) is a major goal of rehabilitation because it improves quality of life and social participation. RTW process depends on sociodemographic, disease-related and work-related factors that might act as barrier or facilitator. From a rehabilitation perspective, work-related factors are potentially modifiable in order to facilitate RTW of CSs. However, data from Central and Southern Europe are absent.

### Objectives

To estimate the RTW rate of Italian CSs; To identify work-related factors that could influence the RTW process.

### Methodology

Based on the Cancer Registry of Reggio Emilia data of the year 2012, a population-based cross-sectional survey has been conducted from 2016 to 2017. We included working age individuals (aged 20 to 59 years) diagnosed with first infiltrating malignant cancer in 2012 (stage I-III) and employed at diagnosis. We excluded individuals with non-melanoma skin cancer, relapse or progression of the disease. Consent to participate was requested before interviews. The relative risks were calculated.

### Results

Of the 594 eligible individuals, 266 were interviewed. The employees were 200 (75%), of which the 70% employed in private companies and 88% had a full-time work contract. On the whole sample, RTW rate of CSs accounted for 95%, of which almost half perceived difficulties in RTW. Individuals who reported uncertainty about the type of companies had more difficulties in RTW (RR=1,68;IC95%1,03-2,72). Work in the evening and at night seemed to impact negatively on RTW (RR=1,23;IC95%0,95-1,57; RR=1,36;IC95%0,99-1,86, respectively) as well as the work on shifts (RR=1,30;IC95%0,94-1,78). Individuals with physically demanding work experienced more difficulties in RTW (RR=1,19;IC95%0,92-1,55) than did those who had a psychologically demanding work (RR=0,86;IC95%0,67-1,10).

### Conclusion

Rehabilitation should consider these work-related factors in order to facilitate the RTW process of CSs.

**Keywords:** Return to Work, Cancer Survivors, Rehabilitation, Italy

## 63 - Papillary Carcinoma diagnosis: from cytology to macroscopy table - Case Report

R Costa<sup>1</sup>, T. Cruz<sup>1</sup>, P. Agapito<sup>2</sup>, S. Semião<sup>2</sup>, V. Sousa<sup>2,3</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

<sup>2</sup>Serviço de Anatomia Patológica do CHUC, Portugal

<sup>3</sup> Instituto de Anatomia Patológica, Patologia Molecular, Faculdade de Medicina da Universidade de Coimbra, Coimbra, Portugal

*Email: raquelpirescosta\_97@hotmail.com*

### Introduction

Thyroid carcinomas have been increasing, being Papillary Carcinoma the most common, representing approximately 90% of all carcinomas of this gland. Papillary carcinoma is a slowly developing malignant neoplasm, but metastasis may occur. This condition manifests clinically as a lump, which is detected by palpation or imaging exams. Subsequently, a fine needle aspiration (FNA) is performed.

### Objectives

This work was carried out in order to gain a clearer view of how the diagnosis of Papillary Carcinoma is performed, as well as to demonstrate the mode of action before a positive cytology and macroscopy for this entity and the most cytological and macroscopic relevant characteristics.

### Methodology

That's a study that consists in cytological evaluation of a patient with thyroid nodules. The patient underwent an FNA and after that underwent thyroidectomy for macroscopic evaluation, where the thyroid was oriented anatomically, weighed, measured, painted and sectioned to allow further histological diagnosis.

### Results

Papillary carcinoma presented abundant cellularity, cells with malignancy characteristics, papillary pattern architecture and fibrovascular axes, intranuclear pseudoinclusions and psamomatous bodies. Macroscopically showed well-defined white-pink and homogeneous nodules with fibro-elastic consistency. Representative fragments were sectioned for histological evaluation.

### Conclusion

The cytology obtained from FNA is essential in the diagnosis of papillary thyroid carcinoma. When cytology is positive for this condition, the main form of treatment is a thyroidectomy, presenting a good prognosis and a high survival rate in cases diagnosed in the early stages.

**Keywords:** Papillary Carcinoma; diagnosis; fine needle aspiration; macroscopy

# 65 - Dietary Interventions using Facebook®: A Systematic Review

V Cunha<sup>1</sup>, S Montenegro<sup>2,3</sup>, P Padrão<sup>1,3</sup>

<sup>1</sup>Faculdade de Ciências da Nutrição e Alimentação, Universidade do Porto, Rua Dr. Roberto Frias, 4200-465 Porto, Portugal

<sup>2</sup>Unidade de Recursos Assistenciais Partilhados do Agrupamento de Centros de Saúde do Baixo Mondego-Polo da Figueira da Foz, Figueira da Foz, Rua Vasco da Gama, nº 124, 3080-043 Figueira da Foz, Portugal

<sup>3</sup>EPIUnit, Instituto de Saúde Pública, Universidade do Porto, Rua das Taipas, nº 135, 4050- 600 Porto, Portugal

Email: vera.sccunha@gmail.com

## Introduction

Facebook® has been used as a delivery tool to change food and nutritional behaviors. Health professionals, consumers, researchers and policy makers have access to contradictory information about the efficacy, effectivity, acceptability and ethical concerns of Facebook® nutritional interventions. Evaluate and interpret this evidence and incorporate it into health decisions makes crucial synthesize studies' results.

## Objective

The review question addressed for this systematic review is: "Are Facebook® nutrition-related interventions effective, feasible and acceptable for general population?" In order to answer the purposed question, the aim of this systematic review was to synthesize the results about the effect of nutritional interventions delivered through Facebook® in nutrition-related outcomes.

## Methodology

A total of 4824 records were identified from 5 databases (PubMed: 217, Web of Science: 228, Ovid: 4211, Scopus: 81 and Cochrane: 87) on June 5, 2019. This review included 18 studies: 13 randomized controlled trials, 2 quasi-experimental studies, 2 case-studies and 1 non-randomized controlled trial. This systematic review protocol was formulated based on Cochrane Guidelines for Systematic Reviews of Health Promotion and Public Health Interventions and Preferred Reported Items for Systematic Reviews and Meta-Analyses (PRISMA)

## Results

Interventions had a positive nutritional-related impact in most of the studies (78%). Most of the studies had, as primary outcome, weight management (13 studies) and 1 study had it as secondary outcome. Nutritional knowledge was the primary outcome of two studies and dietary intake of other two. The intervention had a positive outcome in weight management in 7 of the 14 studies, a neutral outcome in 7 and a negative outcome in 1. From the 7 studies that had dietary intake as outcome, 6 had a positive impact and 1 was neutral. All the studies that measured Food and Nutritional Knowledge (2 studies) and Food and Nutritional Behavior (2 studies) had a positive result on this outcome.

## Conclusions

The studies included in this systematic review allowed to conclude that Facebook® is a promising way to deliver dietary interventions, however it was not possible to conclude about the effectiveness of this tool in nutrition related outcomes. Facebook® promotes the engagement of the participants and are acceptable for general population. The heterogeneity between studies did not allow to conclude about the relation between retention rate and offering gifts to the participants.

**Keywords:** Facebook, dietary interventions, dietary intake, nutritional knowledge, weight management

## 68 - Designing a Virtual Reality-Based application to Foster Motivation in a Restorative Therapy and Rehabilitation Support Equipment

L Soares<sup>1</sup>, C Páris<sup>1</sup>, A Gomes<sup>1</sup>, L Roseiro<sup>1</sup>, J Laíns<sup>2</sup>, F Carvalho<sup>2</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ISEC, Portugal

<sup>2</sup>Centro de Medicina de Reabilitação da Região Centro - Rovisco Pais, Portugal

Email: a21240440@alunos.isec.pt

### Introduction

Rehabilitation has a huge barrier when it comes to patient engagement and motivation, not only because the recovery process of a patient is difficult, painful and time-consuming but also because there is a lack of evolved machines/systems with the necessary technology to provide a better overall experience for the patients. The work described here is part of the development of the Exobike project, an equipment similar to a bike, for the rehabilitation of individuals with physical injuries, as well as neurodegenerative diseases. The project is being developed in partnership with Centro de Medicina de Reabilitação da Região Centro - Rovisco Pais.

### Objectives

The aim of this work focuses on the design of a virtual reality application incorporated with gamification techniques which goal is to provide additional motivation and to allow patients to correct their body posture autonomously, through visual, auditory and haptic feedback.

### Methodology

Interviews were conducted with the involved medical team to collect information about the patients' needs. The literature was reviewed to learn existing gamification techniques, the psychological mechanisms behind them and how to apply them in the rehabilitation context.

### Results

During a session, the patients' movements are reflected in a virtual environment (VE) displayed in a monitor in front of them or through a virtual reality headset. The VE has different visual attractive scenarios with landscapes familiar to the patients, where there are trees, a lagoon, buildings, animals and fixed circuits that patients will have to follow. Gamification techniques such as progress messages to reward goal completion, self-competition, amongst others, are implemented in the design.

### Conclusion

The work presented here, which is currently under development, was presented to the medical team who demonstrated great acceptance. A final Exobike prototype will be tested and validated in Rovisco Pais as well as in homecare environment.

**Keywords:** Words; Motivation; Virtual Reality; Gamification; Rehabilitation



## 74 - Influence on ankle range of motion and gait pattern of the application of Mulligan Mobilization with Movement technique to increase ankle dorsiflexion: a systematic review

J Marouvo<sup>1,2</sup>, L Cavalheiro<sup>1,2</sup>, M Castro<sup>1,2,3</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

<sup>2</sup>Instituto Politécnico de Coimbra, ESTeSC – RoboCorp Laboratory, Portugal

<sup>3</sup>University of Coimbra – Centre for Mechanical Engineering, Materials and Processes, Portugal

Email: [duartemarouvo@gmail.com](mailto:duartemarouvo@gmail.com)

### Introduction

The foot is a joint complex that allows ground reaction forces dissipation and absorption in earlier stance phase of gait pattern providing a stable structure during propulsion phase. Ankle joint mobility plays an important role in functional activities. Limited ankle dorsiflexion range of motion (DF-ROM) is an intrinsic risk factor for several ankle injuries due to tibiotarsal joint abnormal movement.

### Objectives

The systematic review aim was to investigate Manual Therapy Mulligan Mobilization with Movement (MWM) technique effects on ankle DF-ROM and gait pattern.

### Methodology

A computerized database search of MEDLINE, PEDro and CENTRAL was realized in May 2019. The reviewer applied inclusion criteria to selected articles for review and quality assessment which was evaluating MWM technique effects to increase ankle DF-ROM and its gait pattern influence. Articles were grouped into two categories: ankle DF-ROM and gait pattern assessment. All studies reported specific pre-/post-intervention outcomes obtained with MWM technique. A final selection of 14 articles was reviewed.

### Results

Selected articles focused on analyzing MWM technique effects on gait pattern and ankle DF-ROM. Twelve articles analyzed effects on ankle DF-ROM in subjects with limited ankle DF-ROM, several musculoskeletal and neurological conditions – there was moderate evidence for increased DF-ROM where in the post-intervention were significantly greater when compared to pre-intervention assessment. Two studies didn't obtain statistically significant differences. Six articles investigated effects on gait pattern parameters (cadence, speed, step length, time to heel-off, ankle DF-ROM before heel-off) – there was strong evidence that increasing ankle DF-ROM was positively associated with gait pattern alterations.

### Conclusion

Literature provides evidence of MWM technique effects in influencing ankle DF-ROM and gait pattern on several conditions.

**Keywords:** Limited ankle dorsiflexion, ankle joint, mobilization with movement, Mulligan Concept, gait pattern.

## 80 - Evaluation of usability and user satisfaction with Parkinson's disease on the use of an application with rhythmic auditory stimulation associated to physiotherapy

S Castro<sup>1</sup>, I Gondim<sup>3</sup>, I Azevedo<sup>2</sup>, M Rodrigues<sup>4</sup>, M Coriolano<sup>1,2</sup>, O Lins<sup>3</sup>

<sup>1</sup>Universidade Federal de Pernambuco / Programa Pró-Parkinson, UFPE – Brasil

<sup>2</sup>Programa de Pós-Graduação em Gerontologia, UFPE – Brasil

<sup>3</sup>Programa de Pós-Graduação em Neuropsiquiatria e Ciências do Comportamento, UFPE – Brasil

<sup>4</sup>Programa de Pós-Graduação em Engenharia Biomédica, UFPE - Brasil

Email: [gracawander@hotmail.com](mailto:gracawander@hotmail.com)

### Introduction

The use of Rhythmic Acoustic Stimuli (RAS), such as a metronome or music with beat stress, has been employed in the physiotherapeutic rehabilitation as a strategy for the treatment of gait alterations in Parkinson's disease (PD). Therefore, an application with RAS (ParkinSONS) was created, embarked on smartphone, with a repertoire of regional national songs, varying between 70 and 120 bpm cadences selected by the professional according to the patient's needs.

### Objective

To evaluate the usability by professionals and the satisfaction of patients with PD regarding the use of the application ParkinSONS associated to physiotherapy.

### Methods

Cross-sectional study conducted with patients with idiopathic PD in moderate stage, enrolled in a reference program in the city of Recife/Brazil, users of the application and with professionals in the area of rehabilitation that act in the mid region of the city. The usability of the application by professionals was evaluated through the checklist for Evaluation of the Usability of Applications for Touchscreen Phones (MATCh), whose score is obtained through the site <http://match.inf.ufsc.br:90/index.html>. The patients' satisfaction was evaluated using a visual analogue scale (VAS) and a semi-structured questionnaire of satisfaction and suggestions.

### Results

Ten professionals, 8 physical therapists and 2 occupational therapists answered the MATCh. The average score obtained was 67 ( $\pm 3.3$ ), corresponding to "very high usability" in 100% of the sample. Regarding the satisfaction of 12 patients, the mean of the VAS was 9.1 ( $\pm 0.7$ ). The satisfaction expressed by users ranged from satisfied (17% of responses) to very satisfied (83% of responses). Increasing the musical repertoire is one of the suggestions most cited by patients.

### Conclusion

The results obtained reveal high usability by professionals and high patients' satisfaction with the association between ParkinSONS application and protocol of physiotherapy.

**Keywords:** Geriatrics, Parkinson's Disease, Acoustic Stimulation, Music, Smartphone.

## 81 - Mulligan Mobilization with Movement technique influence on gait pattern, in adults with limited ankle dorsiflexion

J Marouvo<sup>1,2</sup>, M Castro<sup>1,2,3</sup>, L Cavalheiro<sup>1,2</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

<sup>2</sup>Instituto Politécnico de Coimbra, ESTeSC – RoboCorp Laboratory, Portugal

<sup>3</sup>University of Coimbra – Centre for Mechanical Engineering, Materials and Processes, Portugal

Email: [duartemarouvo@gmail.com](mailto:duartemarouvo@gmail.com)

### Introduction

Limited ankle dorsiflexion (DF) is an anatomical limitation leading to pathological foot compensation, disorders and anatomical misalignment inducing tibiotarsal joint abnormal movement. Limited DF is an injury risk factor for several lower-limbs injuries. Increased DF provide greater joint stability and decrease ligament overload reducing injury risk or recurrence.

### Objectives

Investigate Mulligan Mobilization with Movement (MWM) effectiveness to increase limited DF and its gait pattern influence.

### Methodology

This clinical trial and longitudinal study was realized at RoboCorp Laboratory-Physiotherapy, at Coimbra Health School-Polytechnic Institute of Coimbra. The sample was composed by 19 young (20,19yo  $\pm$ 2,077) participants (17 males and 2 females) comprising 38 ankles, 26 in experimental group with limited DF and 12 ankles in control group without limitation. Five sets of 10 repetitions of MWM technique were applied to increase DF, in experimental group, while control group realized no intervention. Each group was subjected to goniometric, kinetic and kinematic measurements using goniometry, 3D-motion capture system (200 Hz sampling frequency tracking full-body marker setup displacement based in IOR model) and force platform during gait performance. Subjects were assessed prior and after the technique realization on affected ankle. Maximum range of motion (ROM) differences were measured with Visual3D and statistic comparisons by T-test means to analyze variables between pre-post-intervention and U-Mann Whitney test to analyze variables between groups with SPSS 23.0 software (SPSS Inc. Chicago, USA) setting 0.05 significance level.

### Results

Ankle joint increased maximum ROM ( $p < 0.001$ ) and also time to heel-off ( $p < 0.001$ ). Knee and hip joints normalized ROM adjusting gait pattern.

### Conclusion

The study showed MWM technique effectiveness to increase maximum ankle DF and time to heel-off during gait, indirectly normalizing adjacent joints ROM.

**Keywords:** Limited ankle dorsiflexion, Mulligan Concept, gait pattern, risk factors

## 83 - Types of respiratory pattern in different stages of Parkinson's disease

A Esteves<sup>1</sup>, A Fraga<sup>1</sup>, R Santos<sup>1</sup>, M Coriolano<sup>2</sup>, O Lins<sup>3</sup>

<sup>1</sup>Universidade Federal de Pernambuco, UFPE – Brasil

<sup>2</sup>Programa de Pós-Graduação em Gerontologia, UFPE – Brasil

<sup>3</sup>Hospital das Clínicas, UFPE – Brasil

Email: [anacfe83@gmail.com](mailto:anacfe83@gmail.com)

### Introduction

The changes in the respiratory pattern in Parkinson's Disease (PD) can be explained by the increased stiffness of the respiratory muscles, postural dysfunctions, alteration in the muscle activation and coordination with the involvement of the upper airways. The type of respiratory pattern in these individuals is quite varied and may be related to motor signs, time and progression of the disease, information relevant to the therapeutic management.

### Objectives

To evaluate the types of respiratory pattern that may be present in patients with PD during the progression of the disease.

### Methodology

A cross-sectional observational study, performed in patients with mild to moderate idiopathic PD, enrolled in a reference program in the city of Recife/Brazil and in healthy individuals without PD, control group (CG). The types of respiratory pattern were identified using spirometry to obtain the parameters: Forced Vital Capacity (FVC), Forced Expiratory Volume in one second (FEV<sub>1</sub>), ratio between forced expiratory volume in one second and forced vital capacity (FEV<sub>1</sub>/FVC), Forced Expiratory Flow in the 25-75 range (FEF<sub>25-75</sub>), peak expiratory flow (PEF).

### Results

The sample comprised 49 patients with PD (26 men and 23 women) with a mean age of 62 years and 17 people in the CG (3 men and 14 women) with a mean age of 66 years. The types of respiratory pattern identified in the group with PD were "normal pattern" (43%) in the initial stages, "restrictive pattern" (41%) in moderate stages and "obstructive pattern" (16%) in the more advanced stages. The CG showed normal patterns in 76% and restrictive in only 24%.

### Conclusion

The restrictive respiratory pattern was prevalent in PD patients in the study.

**Keywords:** Parkinson's Disease, Work of Breathing, Pulmonary Ventilation

## 85 – The purpose of an exercise program of telemonitored respiratory in-home physiotherapy on respiratory muscle strength, pulmonary function and quality of life in Parkinson's disease

A Esteves<sup>1</sup>, A Fraga<sup>1</sup>, R Santos<sup>1</sup>, M Coriolano<sup>2</sup>, O Lins<sup>3</sup>

<sup>1</sup>Universidade Federal de Pernambuco, UFPE – Brasil

<sup>2</sup>Programa de Pós-Graduação em Gerontologia, UFPE – Brasil

<sup>3</sup>Hospital das Clínicas, UFPE – Brasil

Email: [anacfe83@gmail.com](mailto:anacfe83@gmail.com)

### Introduction

Therapeutic exercises at home are targets of interest in the treatment of various diseases. Telemonitoring programs of physiotherapy presents satisfactory results in the treatment of Parkinsons Disease (PD), but there are no reports on respiratory physiotherapy.

### Objectives

To evaluate the effect of an exercise program of telemonitored respiratory in-home physiotherapy on muscle strength, pulmonary function and quality of life in patients with PD.

### Methodology

A clinical trial conducted at a reference program in PD in Pernambuco/Brazil. Based on sample size calculation, 32 patients were divided into two groups: the intervention group (IG, n=16) and control group (CG, n=16). In the IG, an individualized orientation of the exercises of respiratory physiotherapy was conducted and a diary for notes of exercises (day, time) and difficulties was delivered. The exercises were performed three times per week with a maximum duration of 60 minutes, during 12 weeks and the period on of the medication. There were weekly phone calls from a physiotherapist for strengthening the exercises, to clarify doubts and encourage the continuity of the exercises. The CG followed the usual procedure of the program without individualized guidance or monitoring by phone. The parameters of respiratory muscle strength, pulmonary function and quality of life (Parkinsons Disease Questionnaire 39/PDQ-39) between the groups were evaluated before and after the 12 weeks. The ANOVA one way, post hoc T test (LSD) were the statistical tests used, considering  $P < 0.05$ .

### Results

Increased muscle strength and some parameters of pulmonary function in the IG in relation to the CG. Increased score of the PDQ-39 in the CG, whereas in the IG, there was a maintenance of this perception.

### Conclusion

Program of exercises of telemonitored respiratory in-home physiotherapy, with individualized approach and weekly monitoring of the physiotherapist has improved the data evaluated.

**Keywords:** Parkinsons Disease, Physiotherapy, Self-Care

## 88 – Effect of rhythmic auditory stimulation with music on the mood in people with Parkinson disease

C Oliveira<sup>1</sup>, I Azevedo<sup>2</sup>, I Gondim<sup>3</sup>, S Castro<sup>1</sup>, C Nascimento<sup>2</sup>, M Coriolano<sup>1,2</sup>

<sup>1</sup>Universidade Federal de Pernambuco / Programa Pró-Parkinson, UFPE – Brasil

<sup>2</sup>Programa de Pós-Graduação em Gerontologia, UFPE – Brasil

<sup>3</sup>Programa de Pós-Graduação em Neuropsiquiatria e Ciências do Comportamento, UFPE - Brasil

Email: [izauram73@hotmail.com](mailto:izauram73@hotmail.com)

### Introduction

The progressive increase in the incidence of depression and suicide among the elderly has called the attention of society and the scientific community, being a subject of relevance to public health. Among the possible factors triggers of depressive symptomatology, highlight the diagnosis and the coping of neurodegenerative diseases such as Parkinson's disease (PD). The pharmacological treatment of depressive symptomatology in PD is performed with the use of antidepressants associated to antiparkinsonian medication; however, it is believed that the non-pharmacological approach through music can be used for the relief of symptoms.

### Objectives

To assess the impact of physiotherapy associated with rhythmic auditory stimulation (RAS) with music on the mood of people with PD.

### Methodology

An intervention study with patients with idiopathic PD in moderate stage, registered in a program of reference of a university hospital in the Northeast of Brazil. The research of depressive symptomatology was performed using the Beck Depression Inventory (BDI). The BDI comprises 21 items that allow you to classify the intensity of depressive symptomatology and signalize for the suicidal ideation. The higher the score, the worse the symptoms. As an intervention, there were conducted 10 sessions of physiotherapy associated with the use of an app for smartphone with RAS with national regional songs. The paired comparison was performed by T test, whereas  $p < 0.05$ .

### Results

The sample comprised 10 patients with moderate PD ( $64 \pm 10$  years), being 6 men and 4 women, without the use of antidepressants and without significant changes to the daily dose of levodopa. The average total score of the BDI significantly reduced from 9.4 ( $\pm 7.9$ ), in the evaluation, to 5.0 ( $\pm 4.4$ ) in the re-evaluation ( $p = 0,026$ ). No patient scored the item of suicidal ideation.

### Conclusion

Physiotherapy associated with the RAS with music improved the mood of the patients in this study.

**Keywords:** Geriatrics, Parkinson Disease, Depression, Acoustic Stimulation, Music, Smartphone

## 92 – Eradication of *Helicobacter pylori* - Resistance mechanisms and new therapeutic options

J Balteiro<sup>1</sup>, C Lopes<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School

Email: [catiasofia321@hotmail.com](mailto:catiasofia321@hotmail.com)

### Introduction

*Helicobacter pylori* has acquired an outstanding during the last decades, being recognized as a bacterium that affects a large part of the population. It is located in the gastric mucosa and may be associated with some pathologies such as: gastritis, peptic ulcers among others.

### Objectives

This study aims to systematically read about the resistance that has arisen with the existing therapeutics and the new options that have appeared to overcome this problem.

### Methodology

Inclusion criteria were defined in particular, studies on the bacterium (characterization, physiology, microbiology), on pathologies related to it, on the therapeutic resistance existing in *Helicobacter pylori* and on the new therapeutics of the same.

### Results

Efficacy and eradication rates have been declining since resistance to antibiotics used in treatment has been increasing, especially Clarithromycin, which leads to a major break in treatment.

### Conclusion

This triggers the need to develop new therapeutic schemes and the continuing need to seek new solutions.

**Keywords:** *Helicobacter pylori*; Pathologies associated; Resistance to antibiotics; New therapeutic schemes

## 95 – Health Literacy Level in the Audiology and Pharmacy ESTeSC students

J Balteiro<sup>1</sup>, M Caseiro<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School

Email: [monicacaseiro97@hotmail.com](mailto:monicacaseiro97@hotmail.com)

### Introduction

Health literacy is a concept that has been discussed and studied over the last few decades and it is an essential element for the empowerment of the citizens in relation to the decisions made in the field of health.

### Objectives

In this work, the objective is to ascertain the literacy level of the student population of health school, specifically to make a comparison between the students of two of the courses taught and to verify if the training received influences the health literacy of the students.

### Methodology

The study began with the application of a questionnaire (HLS-EU-PT) to a sample of 160 students.

### Results

Results show that the population under the study has a sufficient level of health literacy (42%), a problem level of 32.5%, an excellent level of 21.7% and an inadequate level of health literacy, 3.8%, with the age of the participants, with the course they attend or with the year of formation not having a significant change of the data.

### Conclusion

The results, while satisfactory, also reveal that a high percentage of audiology and pharmacy students have a problematic level of health literacy, and it is necessary to develop projects that increase this level of literacy and future research to determine if the projects are having effects.

**Keywords:** Literacy; Health; Students; HLS-EU-PT



## 104 – Training and auditory effort

F Maia<sup>1</sup>, V Jesus<sup>2</sup>, S Paulo<sup>2</sup>, L Marcelino<sup>2</sup>, M Serrano<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTESC-Coimbra Health School, Audiologia, Portugal

<sup>2</sup>Evollu – Sensing Evolution

Email: mserrano@estescoimbra.pt

### Introduction

The concept of listening effort is based on a limited capacity model, in which cognitive operations in execution involves a certain percentage of total cognitive capacity. Increasing the difficulty of speech perception in adverse environments such as increased background noise or reverberation will require additional resources and therefore will increase the listening effort required for correct speech perception, especially in the presence of hearing loss. Identifying how this effort can be reduced is of great importance.

### Objectives

To verify if the listening effort decreases after auditory training with EVOLLU app in individuals between 55 and 64 years old without cognitive problems and with an approximate average of hearing thresholds of 20dB.

### Methodology

The sample consisted of two groups of seven individuals each. One group performed eight auditory training sessions over four weeks with the EVOLLU application and the other group (control) did not perform auditory training. Individuals were assessed with the n-back task developed by McCoy et al adapted to European Portuguese. The training group was evaluated before and immediately after the auditory training and the control group was evaluated at four weeks' interval.

### Results

There were no differences in auditory effort between before and after auditory training in both groups.

### Conclusion

The auditory training performed does not improve the auditory effort in individuals between 55 and 64 years of age with an approximate average of 20dB of hearing thresholds. Studies with longer duration of auditory training or in the presence of hearing loss are necessary to confirm these results.

## 106 – Reduced Visual Acuity in 5-year-old children

AF Nunes<sup>1,2</sup>, F Sena<sup>2</sup>, R Tuna<sup>1</sup>, A Gonçalves<sup>3</sup>, R Calado<sup>3</sup>, M Esperança<sup>3</sup>, P Monteiro<sup>1,2</sup>

<sup>1</sup>Universidade da Beira Interior; CICS-Centro de investigação em Ciências da saúde

<sup>2</sup>Universidade da Beira Interior; Centro Clínico e Experimental em Ciências da saúde

<sup>3</sup>Administração Regional de Saúde de Lisboa e Vale do Tejo; Unidade de Saúde Pública

Email: [amnunes@ubi.pt](mailto:amnunes@ubi.pt)

### Introduction

Visual acuity (VA) in children is a clinically relevant measure in screening actions, especially for the detection of significant refractive errors and suspected amblyopia. Amblyopia and uncorrected refractive errors are the leading cause of vision loss in children.

### Objectives

To assess visual acuity in 5-year-old children and to estimate the frequency of reduced visual acuity (VA).

### Methodology

Study aimed at children who attend the last year of pre-school in the Kindergarten and Private Social Solidarity Institutions (IPSS) covered by ACES of Médio Tejo. All children participated with the permission of their parents. LEA charts were used at 3 meters and the presentation monocular VA's were measured. The following classification criteria were used: AV normal if both eyes have VA equal or better than 0.1 LogMAR and VA reduced if at least one eye has VA worse than 0.1 LogMAR.

### Results

The total sample consisted of 2184 children, 1059 girls and 1125 boys. The mean VA was 0.1 LogMAR ( $\pm 0,08$  SD) for right eye and for left eye. According to established classification criteria, the total number of children with normal VA in both eyes was 1517 (~70%) and children who had reduced VA in at least one eye were 667 (~30%).

### Conclusion

This study shows that the number of children with reduced VA in at least one eye is quite high, in relation to other related studies, where rates are recorded that vary between 5.6% and 33.3%. The main causes of reduced VA in childhood are amblyopia and uncorrected refractive errors, and these abnormalities affect the child's development, especially at the educational level. Reduced VA affects the performance of a number of major tasks in the learning process. Therefore, it is important to develop and implement strategies to identify these deficits and their solution, before the beginning of the school year.

**Keywords:** Visual Acuity; Children; LEA charts; pre-school

## 107 – The effect of a 12-week multimodal programs on the affordances perception: a risk factor for falls in community-dwelling older adults. Preliminary results

H Rosado<sup>1</sup>, J Bravo<sup>1</sup>, A Raimundo<sup>1</sup>, G Almeida<sup>1</sup>, F Mendes<sup>2</sup>, C Pereira<sup>1</sup>

<sup>1</sup>Departamento de Desporto e Saúde, Escola de Ciências e Tecnologia, Universidade de Évora, Portugal

<sup>2</sup>Escola Superior de Enfermagem São João de Deus, Universidade de Évora, Portugal

Email: hrosado@uevora.pt

### Introduction

An inaccurate perception of action boundaries may be a risk factor for falling in older adults. A psychomotor intervention mainly focuses on body stimulation and movement as mediators could prevent falls. The whole-body vibration (WBV) may improve mobility and locomotor skills, reducing the risk of falling. However, it's unknown whether an intervention that combines both practices has a greater potential, particularly as regards affordances perception.

### Objectives

To investigate the effect of two multimodal programs in community-dwelling older adults (fallers or at increased risk of falling) on stepping-forward (S-F) perception-action boundary.

### Methodology

A total of 37 older adults (74.3±5.2 years) were randomly allocated into two groups: experimental group 1 [EG1] (psychomotor intervention); experimental group 2 [EG2] (psychomotor intervention + WBV). The S-F perception and action boundary were assessed by the stepping-forward affordance perception test.

### Results

Paired-Samples T test comparisons showed differences from baseline to post-intervention on EG1 (real S-F distance (cm): 60.8±17.0 vs. 69.4±15.5,  $p < 0.001$ ; algebraic error (cm): 7.4±10.3 vs. 12.1±11.5,  $p = 0.045$ ; absolute error (cm): 9.9±7.7 vs. 14.6±7.9,  $p = 0.025$ ), corresponding to an effect size (ES) ranging from 0.46-0.60 (medium), and on EG2 (real S-F distance (cm): 65.8±10.5 vs. 70.4±12.6,  $p = 0.033$ ), corresponding to an ES of 0.43 (medium). There were no significant differences between groups.

### Conclusion

A higher real performance and an underestimated (real > estimated) bias works as a protective mechanism to falls occurrence. Present study findings suggest that the multimodal programs were effective in reducing the risk of falling by improving these factors in both groups. Trial Registration: ClinicalTrials.gov Identifier: NCT03446352. Funding: This study was funded by ESACA Project (Grant ALT20-03-0145-FEDER-000007) and by FCT (SFRH/BD/147398/2019).

**Keywords:** Older adults; multimodal programs; affordances perception; falls

# 110 – Rumination Room: The role of executive control in regulating auditory emotional response

C Rosa<sup>1,2</sup>, P Bem-Haja<sup>1,2</sup>, N Mor<sup>3</sup>, C Sarmiento<sup>1</sup>, F Baptista<sup>1</sup>, M Ferreira<sup>1</sup> & Silva, CF<sup>1,4</sup>

<sup>1</sup>Department of Education and Psychology, University of Aveiro, Portugal

<sup>2</sup>CINTESIS.UA – Center for Health Technology and Services Research, University of Aveiro, Portugal <sup>3</sup>Seymour Fox School of Education, The Hebrew University of Jerusalem

<sup>4</sup>William James Research Center, University of Aveiro, Portugal

Email: [catarina.p.rosa@ua.pt](mailto:catarina.p.rosa@ua.pt)

## Introduction

The most prevalent psychiatric conditions, including depressive and anxiety disorders, evidence rumination as a transdiagnostic pathological process in their emergence, maintenance and recurrence. Rumination is associated with impairments in executive control, namely, with difficulties in the ability to suppress irrelevant emotional information. Empirical evidence has shown that tasks recruiting executive control tend to reduce and even eliminate the over activation of emotional content. To deepen this ability to counteract deficits in inhibitory processes to downregulate emotional activation seems to be of crucial relevance considering the range of predictable targets.

## Objectives

In this study, we intend to explore the efficacy of a training procedure that recruits executive control prior to exposure to negative spoken words in reducing rumination.

## Methodology

A sample of 80 participants (40 male and 40 female) will be randomly assigned to one of two training conditions: a) experimental condition – negative stimuli are mainly preceded by a task requiring executive control activation, and neutral stimuli are mainly preceded by a task no requiring executive control activation; b) control condition – the exact opposite pairing occurs.

## Results

Preliminary results will be presented and discussed.

## Conclusion

We argue that the development of cognitive training procedures to strengthening executive control can reduce deficits in emotional regulation. This study is in line with the urgent need for researchers and clinicians to join efforts in designing more effective psychopharmacologic and psychotherapeutic interventions that may work out in the dramatic reduction of mental health epidemiologic numbers.

**Keywords:** rumination; executive control; emotional response, auditory stimuli

## 111 – Levels of TNF- $\alpha$ and TIMP-4 in obesity

I Silva<sup>1</sup>, M Clemente<sup>1</sup>, A M Silva<sup>1</sup>, C Ferreira<sup>1</sup>, J P Figueiredo<sup>2</sup>, M Monteiro<sup>3</sup>, A Gabriel<sup>1</sup> e A Caseiro<sup>1,4,5</sup>

<sup>1</sup> Instituto Politécnico de Coimbra, ESTeSC- Coimbra Health School, Portugal- Ciências Biomédicas Laboratoriais.

<sup>2</sup> Instituto Politécnico de Coimbra, ESTeSC- Coimbra Health School, Portugal -Ciências Complementares.

<sup>3</sup> Instituto Politécnico de Coimbra, ESTeSC- Coimbra Health School, Portugal- Imagem Médica e Radioterapia.

<sup>4</sup> Unidade I&D Química-Física Molecular, FCT, Universidade de Coimbra.

<sup>5</sup> LABINSAÚDE - Laboratório de Investigação em Ciências Aplicadas à Saúde, Instituto Politécnico de Coimbra, ESTeSC, Portugal.

Email: [isabelnatercia@hotmail.com](mailto:isabelnatercia@hotmail.com)

### Introduction

The prevalence of obesity has increased over time. Obesity can be defined as an excess of body fat, marked by a chronic inflammation, being a risk factor for many diseases. Adipose tissue performs several functions, one of which is the secretion of inflammatory mediators such tumor necrosis factor alpha (TNF- $\alpha$ ). The extracellular matrix plays a critical role in maintaining the structure and function of adipose tissue, being involved the matrix metalloproteinases and its tissue inhibitors (TIMPs), such as TIMP-4 which has been described its paper in many cellular processes.

### Objectives

The aim of this study was to determine the serum and salivary levels of TNF- $\alpha$  and serum levels of TIMP-4 in adults, considering their body mass composition and lipid profile.

### Methodology

The study population included 39 individuals that have been characterized for body fat percentage, through Dual-Energy X-ray Absorptiometry (DEXA) technology, for biochemistry and lipid profile. The semi-quantification of TNF- $\alpha$  and TIMP-4 were accomplished by slot blot technique.

### Results

It was verified higher levels of TNF- $\alpha$  in the obese group in serum and saliva. There was a moderate and low positive correlation between TNF- $\alpha$  serum levels and triglycerides (TG) ( $p < 0.001$ ) and Protein C Reactive (CRP) ( $p = 0.0326$ ), respectively. It was also observed a moderate positive correlation between serum levels of TIMP-4 and total cholesterol (CT) ( $p < 0.0001$ ) and low-density lipoprotein cholesterol (c-LDL) in serum ( $p = 0.0003$ ).

### Conclusion

The increased levels of TNF- $\alpha$  and the positive association between TNF-  $\alpha$  and CRP sustenance the inflammatory process involved in the development of obesity. TIMP-4 correlates with lipid profile, having this marker impact on body composition.

**Keywords:** Obesity; TNF-  $\alpha$ ; TIMP-4; lipid profile; body composition

## 119 – Relationship of sugar intake and anthropometric data in higher education students

M Marta<sup>1</sup>, M Marques<sup>1</sup>, J Figueiredo<sup>1</sup>, S Fialho<sup>1</sup>, P Matafome<sup>1,2</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

<sup>2</sup>Instituto de Fisiologia e Instituto de Investigação Clínica e Biomédica de Coimbra, Faculdade de Medicina, Universidade de Coimbra

Email: margarida\_marta@hotmail.com

### Introduction

The transition to higher education is associated with the risk of weight gain and the development of unhealthy behaviors. This change may be accompanied by a change in eating habits such as increased consumption of sugary foods, sodas, sweet snacks/desserts and fast food.

### Objectives

To relate the intake of different types of sugars with anthropometric parameters.

### Methodology

In order to analyze the natural and added sugars intake, we used the Semi-Quantitative Food Frequency Questionnaire. For the anthropometric evaluation, a tape measure, stadiometer and bioimpedance scale were used to assess the waist circumference (WC), hip waist ratio (HWR), Body Mass Index (BMI) and percentage of fat mass and lean mass. Authors analyzed the information with SPSS Statistics.

### Results

There is a statistically significant relationship between BMI and HWR and lower intake of naturally occurring sugars. The percentage of fat mass shows the same trend. High levels of fat mass are associated with higher intake of added sugars, while BMI has a non-significant trend towards added sugars and HWR is unrelated.

### Conclusion

The subject of our study is little investigated and one of the few that distinguishes naturally present from added sugars, as most focus on total sugars. With this study we can verify that the consumption of added sugars is related to the aggravation of anthropometric parameters.

**Keywords:** natural sugars; added sugars; anthropometric data; higher education students

## 122 – Nutritional knowledge and sugar intake in college students

M Marques<sup>1</sup>, M Marta<sup>1</sup>, J Figueiredo<sup>1</sup>, P Matafome<sup>1,2</sup>, S Fialho<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

<sup>2</sup>Instituto de Fisiologia e Instituto de Investigação Clínica e Biomédica de Coimbra, Faculdade de Medicina, Universidade de Coimbra

Email: [mariana.raquel.97@hotmail.com](mailto:mariana.raquel.97@hotmail.com)

### Introduction

Over the past few years, studies have shown that a low level of health literacy is a risk factor for various conditions such as diabetes, cardiovascular disease and cancer. Low dietary literacy is associated with poor dietary habits, such as sugar intake. In Portugal, 61% of the population has an overall level of health literacy considered inadequate, which increases as schooling also increases, being higher in participants with higher education.

### Objectives

To compare the nutritional knowledge with natural and added sugars intake in higher education students.

### Methodology

In order to analyze the natural and added sugars intake we used the Semi-Quantitative Food Frequency Questionnaire. To assess the students nutritional knowledge, the Nutritional Knowledge Questionnaire was applied. SPSS Statistics was used to perform the statistical treatment.

### Results

There was a positive correlation between nutritional knowledge and the consumption of naturally present sugars. On the other hand, there is still a negative correlation between the score and the consumption of added sugars.

### Conclusion

It is verified that the consumption of added sugars is related to lower health literacy and aggravation of anthropometric parameters.

**Keywords:** Nutritional Knowledge; added sugars; natural sugars; higher education students

## 127 – Importance of a physical exercise program in a elderly population. Echocardiography analysis

A Carvalho<sup>1</sup>, J Castanheira<sup>1</sup>, T Pereira<sup>1</sup>, J Conde<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

Email: [anacarolina1197@outlook.com](mailto:anacarolina1197@outlook.com)

### Introduction

Portugal is one of the fastest aging countries. Exercise causes changes at the molecular, functional, and structural levels that help preserve ventricular compliance as a result of aging.

### Objectives

Study the heart of an elderly population and the changes caused by an integrated and multidisciplinary intervention model with special emphasis on adapted physical exercise.

### Methodology

Two evaluation were performed using echocardiography, separated by the implementation of three-month multidisciplinary intervention program that included the practice of adapted physical exercise, nutritional adjustment, pharmacotherapeutic counseling and complementary psychosocial activities.

### Results

With the exception of the pulmonary valve, changes associated with aging were found in all other valves. After the implementation of the multidisciplinary program, in the group undergoing physical exercise, there were statistically significant changes for the maximum velocities of the E (p=0.016) and S (p=0.02) waves of mitral valve, E' wave of tricuspid valve (p=0.027) and LV relative parietal thickness (p=0.033). In the other group, only significant changes were observed at the maximum A wave velocity (p=0.022) of the tricuspid valve. For the LV telediastolic diameter, statistically significant changes were found between the two groups, but only in the second evaluation (p=0.041) while the TAPSE showed variations in both groups (p=0.004 with exercise and p=0.045 without exercise).

### Conclusion

The implementation of a multidisciplinary program in elderly individuals caused functional changes that were more evident in the group submitted to physical exercise.

**Keywords:** Aging; Heart alterations; Echocardiography; Physical exercise; Intervention program



## 130 – Personalized medicine in oncology

Ana Misir Krpan<sup>1,2</sup>, Zoran Rakusic<sup>1,2,3</sup>

<sup>1</sup>Univerity Hospital Centre Zagreb, Zagreb, Croatia

<sup>2</sup>School of Medicine, University of Zagreb, Zagreb, Croatia

<sup>3</sup>Univerity of Applied Health Sciences, Zagreb, Croatia

Email: [anamisirkrpan@yahoo.com](mailto:anamisirkrpan@yahoo.com)

### Introduction

In the last few years we have witnessed the incredible achievements in oncology. The development of new drugs has led to a whole new paradigm for the treatment of cancer patients, where until recently incurable malignancies, such as melanoma, have become chronic diseases with long patient survival. Personalized oncology has become an integral part of modern oncology.

### Objectives

In this presentation we will give a more detailed insight into the development of personalized medicine and molecular profiling, explain its place in modern treatment, new challenges, unknowns and limitations we face in everyday practice. The whole concept of oncology was changed after the approval of nivolumab, the first drug to receive tissue agnostic approval, where it becomes an irrelevant primary tumor, and therapy is determined by the molecular mutation present regardless of where the tumor is located. Other drugs like larotrectinib are highly effective in tumors with certain mutations, NTRK fusions. This has also led to the new concept of clinical trials and drug approvals, new diagnostic needs, such as liquid biopsy or omics.

### Methodology

We will demonstrate the importance of personalized medicine and the use of new drugs, using the example of two tumors, of melanoma and a juvenile pilocytic astrocytoma. Describing these tumors we will explain how much change is occurring in the diagnosis and treatment of cancer.

### Results

Literature results will be presented including our extremely rare case of primary meningeal melanoma treated with immunotherapy.

### Conclusion

Personalized medicine split the patient and his disease into the smallest molecules and mutations, leading to unprecedented advances in treatment, but such treatment should not lose sight of the patient as a complete person with their differences, desires and needs. Thus, personalized medicine and person-centered medicine should be applied together and well balanced.

**Keywords:** oncology , molecular profiling, personalized medicine

## 131 – Body composition assessment for fat mass estimation: a correlational study in young soccer players

M Serra<sup>1</sup>, A Faria<sup>1</sup>, A Prata<sup>2</sup>, JP Figueiredo<sup>1</sup>, H Loureiro<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

<sup>2</sup>Instituto Português do Desporto e Juventude, Portugal

Email: [mariana\\_dss\\_97@hotmail.com](mailto:mariana_dss_97@hotmail.com)

### Introduction

Athlete's body composition is determinant in the various sports modalities, being necessary evaluation methods viable and easily applicable, specifically to determine the amount of fat mass (sports performance influencer). The skinfold sum and fat mass percentage measured by bioimpedance are two widely used methods.

### Objectives

To verify existence of correlation/concordance between three methods of fat mass estimation (skinfolds and two bioimpedance instruments) in soccer players.

### Methodology

Anthropometric data were collected from soccer players under-23, such as the skinfold sum and height; fat mass, through Tanita BC-418 and Akern BIA 101. Temporal distance between some actions with possible influence on body hydration and the time of the evaluations was also registered, for further discussion of the results.

### Results

The 13 evaluated players had a mean age of  $19,6 \pm 1,6$  years, 9 (69,2%) were leukodermic (caucasians) and 4 (30,8%) were melanodermic (black race). There was no correlation between the results of bioimpedance and the skinfold sum (with Tanita:  $\rho = 0,287$ ;  $p = 0,341$  and Akern:  $\rho = 0,424$ ;  $p = 0,256$ ), and the intra-bioimpedance results were discordant (mean of  $-4,4778\%$  between the 2 devices, where  $p < 0,0001$ ).

### Conclusion

The results obtained may be due to the reduced sample or by non-ideal evaluation conditions, and consequent heterogeneity of the results. Having associated measurement errors and different body composition determination principles, it is necessary to improve the evaluation methodologies to optimize the reliability of the results.

**Keywords:** bioimpedance; skinfolds; body composition; fat mass; soccer; anthropometry

## 136 – Organic farming: sustainable public health promotion strategy

G Botelho<sup>1</sup>, F Ferreira<sup>2</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, Escola Superior Agrária de Coimbra, CERNAS, Coimbra, Portugal.

<sup>2</sup>Centro Hospitalar do Tâmega e Sousa, E.P.E. - Unidade Padre Américo (CHTS), Penafiel, Portugal.

Email: [goreti@esac.pt](mailto:goreti@esac.pt)

### Introduction

Organic farming is a sustainable production system. Its principles are the preservation of nature and health of populations, being economically viable and promoting social justice. Combining family farming with organic farming (organic family farming) will have a potentiating effect on all pillars of sustainability and public health.

### Objectives

The work developed aims to contribute to the increase of health and agriculture literacy of the Portuguese and propose the inclusion of organic farming as an indicator of public health.

### Methodology

The applied methodology involved the construction for the dissemination, at national level, of an original and pioneering tool that consists of a digital animation elaborated from a pictorial conceptual model that relates organic farming and public health.

### Results

The innovative model was well established and the digital animation is simple and a useful material that can be spread by Ministry of Health, in mobile application format for healthcare professionals and patients and/or disseminated through health institutions' monitors. The model advocates that organic farming is a sustainable public health promotion strategy and, by this reason, the inclusion of organic farming as a public health indicator is necessary and should be the next step to be taken.

### Conclusion

It is essential to invest in the area of health literacy promotion, with the objective of sensitizing society to the importance of organic farming as a sustainable strategy for the promotion of public health. New information technologies can be an important vehicle in this area.

**Funding:** CERNAS is funded by UIDB/00681/2020.

**Keywords:** Organic farming, public health, pictorial conceptual model, health literacy

## 138 – Wallless Doctor's Office Platform

M Pocinho<sup>1</sup>, P Deis<sup>2</sup>, A Amaral<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

<sup>2</sup>Investigador independente

Email: [margarida\\_pocinho@estescoimbra.pt](mailto:margarida_pocinho@estescoimbra.pt)

### Introduction

Today Web applications are becoming increasingly common, emerging as systems designed for use throughout a browser. The advent and development of web applications is related to the need for updating simplification and maintenance keeping source code in the same place, where different users can access it.

### Objectives

show a tool that not only can be applied in the afar clinical psychology (Telepsychology), but also can include clinical history, heartbeat records and oxygen saturation data, allowing the measurement of the physiological response along consultation.

### Methodology

we use one methodology of theoretical, practical and laboratory type that generate a permanent and dynamic relationship among the project participants. Psychometrics and computer programming phases were developed by an experienced psychologist and by a computer engineer with the most recent resources of scientific evidence (software, collaborative online environments, oximeters and computers). The same experts carried on all conceptual architecture and validation of various psychometric tests.

### Results

A platform – Wallless Doctor's Office – was tested and presented to the psychologists at a congress for 2 days; after this period it was tested in Volunteers, in France. The results already showed several stakeholders interested in keeping this form of follow-up consultation.

### Conclusion

In addition to the distant communication capabilities for establishing a therapeutic relationship and teamwork, the platform allows remote consultation and diagnosis using diagnostic aids, along with patients clinical history recording and management of diagnostic help.

**Keywords:** telepsychology, platform, telehealth

## 142 – Energetic intake in preschool children: adequacy analysis

D Pires<sup>1</sup>, JP Figueiredo<sup>1</sup>, J Lima<sup>1,2,3,4</sup>, Maria Helena Loureiro<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

<sup>2</sup>GreenUPorto - Sustainable Agrifood Production Research Center

<sup>3</sup>CiTechCare - Center for Innovative Care and Health Technology

<sup>4</sup>LAQV – Requimte

Email: [danielaffpires@outlook.pt](mailto:danielaffpires@outlook.pt)

### Introduction

Children's eating habits are developing during childhood and an inadequate energy intake supply to the child's needs negatively influences their health.

### Objectives

To analyse the adequacy of energetic intake in preschool children.

### Methodology

During the 2019/20 academic year, anthropometric data were collected using a weighing-machine SECA® 877 and stadiometer SECA® 213, and evaluation of energy intake through a 3-day food registration questionnaire (2 during the week and 1 at weekend) Statistical analysis was achieved using the IBM SPSS Statistics program - version 25.0 for Windows.

### Results

There were evaluated 48 children who were attending in a private preschool, aged between 3 and 6 years old. Concerning nutritional status, the most of children showed a healthy nutrition status, however 47.9% showed an average energy intake lower than their needs (estimated using DRI's equations). When the energy intake during the weekdays was compared with the energy intake during the weekend days, it was found that the intake at the weekend days was higher.

### Conclusion

The energy ingested by the preschool children assessed was adequate, however it was concerned the higher intake at the weekend days.

**Keywords:** energy intake, preschool children, weekdays, weekend

## 145 – Children-menus in restaurants of portuguese shopping centers: a qualitative study

Cláudia Viegas<sup>1,2</sup>, Cláudia Afonso<sup>3,4,5</sup>, João PM Lima<sup>4,6,7,8</sup>, Maria Palma Mateus<sup>9</sup>, Ada Rocha<sup>3,4,7</sup>

<sup>1</sup> Escola Superior de Hotelaria e Turismo do Estoril, Portugal

<sup>2</sup> CITUR - Centre for Tourism Research, Development and Innovation

<sup>3</sup> Faculdade de Ciências da Nutrição e Alimentação da Universidade do Porto, Portugal

<sup>4</sup> GreenUPorto | Centro de Investigação em Produção Agroalimentar Sustentável, Portugal

<sup>5</sup> EpiUnit | Instituto de Saúde Pública da Universidade do Porto, Portugal

<sup>6</sup> Instituto Politécnico de Coimbra – Escola Superior de Tecnologia da Saúde de Coimbra, Portugal

<sup>7</sup> LAQV-Requimte | Universidade do Porto, Portugal

<sup>8</sup> CiTechCare - Center for Innovative Care and Health Technology, Portugal

<sup>9</sup> Universidade do Algarve | Escola Superior de Saúde, Portugal

Email: [adarocha@fcna.up.pt](mailto:adarocha@fcna.up.pt)

### Introduction

Out-of-home food consumption has increased, while several studies have established an association between this pattern of food consumption, particularly in fast-food restaurants, and excessive energy, fat, saturated fat, trans fatty acids and salt intake, associated to low dairy intake, vegetables, complex carbohydrate foods, fiber and various micronutrients. Shopping centers are frequently used by families to eating out and, there is evidence that children's menus available in these restaurants are characterized by low nutritional quality.

### Objectives

Characterize the availability and quality of children's menus in shopping center restaurants in Portugal.

### Methodology

An observational cross-sectional study was carried out in all shopping centers of 6 cities in Portugal. All fast-food restaurants were listed and evaluated, and from those only the ones that provided a children's menu were selected. Data collection tool was developed by the team of researchers, consisting of a three-section form: A: Identification of the restaurant, B: Characteristics of the restaurant and C: Characteristics of the children's menu (options available, meal constituents, nutritional and allergens information and cost, by itself and compared with a non-children menu).

### Results

There were evaluated 184 restaurants, from which only 44 provided a children's menu and from these 6 restaurants offer gifts associated with it. The most frequently featured items on the menu are grilled or fried chicken (25%), hamburgers (25%), nuggets (18%) and pizza (18%). Potato chips are the most frequent side dish options (41%). Only 6 restaurants offered vegetable soup or vegetables added to the meal. Although water was available, soft drinks and sugary fruit juices are also options. Sweet dessert is a common part of the menu. Children's menu price is lower ( $\bar{x} = €5.35 \pm 1.45$ ) than adult menu prices ( $\bar{x} = €8.45 \pm 2.14$ ).

### Conclusion

Children's menu options had poor quality. Shifting foods offered to children in restaurants has the potential to improve diet quality, reduce excess energy intake and promote healthy eating habits.

**Keywords:** Kids menu, qualitative evaluation, restaurant menus

## 147 – Pulse wave weight and speed – vop analysis in young women

J Pereira<sup>1</sup>, A Silva<sup>1</sup>, T Pereira<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

Email: [jpereira@estescoimbra.pt](mailto:jpereira@estescoimbra.pt)

### Introduction

The Measurement of pulse wave velocity is a simple and practical method to assess arterial stiffness and a relevant cardiovascular risk marker.

### Objectives

This study aimed to establish a relationship between PWV and BMI in young Portuguese women.

### Methodology

Measurement of the pulse wave velocity through the Mobil-o-graph device was performed on 30 healthy women, with a mean age of 20,33 years. In the case of women with normal weight, body mass index 21.85 kgm<sup>2</sup> and systolic and diastolic pressure respectively of 114.20 mmHg and 71.07 mmHg. Overweight women, body mass index 28.35 kgm<sup>2</sup> and systolic and diastolic blood pressure respectively 122.20 mmHg and 72.80 mmHg.

### Results

Pulse wave velocity of 4.99 m / s in overweight women versus 4.73 m / s in women of normal weight, p = 0.087.

### Conclusion

Our work demonstrates the existence of a relation, although not linear, between PWV and BMI; in addition to a significant difference between the values of systolic blood pressure, pulse pressure, cardiac output and final pressure, with the highest values in the group of overweight women.

**Keywords:** Pulse wave velocity; Excess weight; Arterial stiffness; Cardiovascular risk

## 148 – Ambulatory blood pressure monitoring in bakery professionals

A Margarido<sup>1</sup>, J Pereira<sup>1</sup>, T Pereira<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

Email: telmo@estescoimbra.pt

### Introduction

After the industrial revolution there was progress in work organizations, increasing demand for night work. These professionals carry out their work activities and rest at times contrary to the normal chronobiological standard. This inversion causes several changes in health in the body, mainly in the circadian cycle that controls several functions, emphasizing the cardiovascular function where it is responsible for the regulation of heart rate and blood pressure.

### Objectives

This project aims to evaluate blood pressure in baking professionals who perform their function in a fixed night regime in order to study the circadian profile and the adaptation in tensional terms to the work rhythm

### Methodology

The sample is made up of 30 male and female individuals, aged between 22 and 66 years old, who work in the bakery sector in a permanent night regime with work hours between 23 and 7 am. The ambulatory blood pressure monitoring technique was used to automatically obtain multiple indirect measurements of blood pressure in a 24-hour period.

### Results

Regarding the blood pressure parameters obtained through ABPM, it was observed that the averages obtained during 24 hours in the daytime and night time are included among the normal values. The female gender has slightly higher values than the male gender. With the analysis of the questionnaires, it was possible to find out that 73.6% of the sample had smoking habits, 90% had coffee drinking habits and 30% consume caffeinated soft drinks.

### Conclusion

In this investigation the nocturnal activity in the professionals who work in a permanent nocturnal regime did not provoke great alterations in the blood pressure level since there is an adaptation to the work regime performed, however this long-term effect is not known.

**Keywords:** Blood pressure; Circadian rhythm; Permanent night work



# 150 – Automatic reporting accuracy: detecting the most common automatic reporting errors on a norav PC-HR1200 electrocardiograph

J Pereira<sup>1</sup>, B Couto<sup>1</sup>, T Pereira<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

Email: [jpereira@estescoimbra.pt](mailto:jpereira@estescoimbra.pt)

## Introduction

Automatic reports analyze the acquired signal based on an algorithm designed to recognize and measure the components of the waves that make up the electrocardiogram. The schedule that allows us to obtain the automatic report is available on most equipment today and has been developed to perform measurements and provide diagnostics as close as possible to those obtained by professionals. This type of report is fallible and can mislead the observer so, due to its increasing use, it is necessary to understand its limitations.

## Objectives

The present project aims to point out the most recurring errors in the automatic report and reflect on its nature.

## Methodology

The sample consisted of 337 electrocardiograms of 12 leads, randomly collected on a digital electrocardiograph. Except for the age and gender of individuals, no other data were recorded, or other clinical information provided. An automatic report and a report by two observers with knowledge in electrocardiology were generated for each examination. Based on the comparison of both reports these will be classified as correct, incorrect or partially correct.

## Results

The reports considered correct represent 83.9% of the exams analyzed in total, the partially correct ones represent 9.6%, and the reports considered incorrect represent 6.5% of the sample.

## Conclusion

The present study demonstrated that the automatic report worked correctly in the generality of the exams.

**Keywords:** Accuracy, Electrocardiogram, Computer interpretation

## 152 – Variability of heart rate in high competition swimmers

E Pereiral<sup>1</sup>, J Pereira<sup>1</sup>, T Pereira<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

Email: [jpereira@estescoimbra.pt](mailto:jpereira@estescoimbra.pt)

### Introduction

The performance of professional swimmers is correlated with the ANS activity - indexed by HRV. This activity reflects the range of heartbeats and it is considered fundamental as a physical fitness control factor or fatigue of swimmers and as a characterizing parameter of a eventual adaptation of individuals to the training load.

### Objectives

The present goal is to evaluate HRV in high competition swimmers maximizing the athletic performance and the competitive outcome.

### Methodology

19 high-level federated swimmers, aged between 12 and 21 years old, were divided into two groups: Group  $\leq 5$  years, of federated athletes for five or less years (eight athletes); and Group  $> 5$  years, of federated athletes for more than five years (eleven athletes). The HRV collection was performed in three different moments, each corresponding to a specific moment of preparation for the sports season.

### Results

In the frequency domain, only a statistically significant difference was found in the in the group  $\leq 5$  years LF index. In the time domain it was statistically significant, the pNN50 variable in the group  $> 5$  years. In a group and interaction moment, there are significant differences in the variable SDNN, RMSSD, NN50 and pNN50, demonstrating that the evolution of these variables in the groups is statically significant

### Conclusion

HRV is a method that can aid the development and adaptation of athletes physical training. The results obtained are a stimulus for future investigations that adopt a more detailed study of the connections and of the several factors related or not with the training that can influence the HRV.

**Keywords:** Heart Rate Variability, sports training, swimming, Autonomic nervous system.

## 156 – Feasibility and safety of physical exercise on bone health in men with prostate cancer receiving androgen deprivation therapy: systematic review of the literature

B Bressi<sup>1,2</sup>, M Cagliari<sup>3</sup>, C Iotti<sup>2</sup>, S Fugazzaro<sup>2</sup>, MC Bassi<sup>2</sup>, S Costi<sup>2,3,4</sup>

<sup>1</sup>PhD Program in Clinical and Experimental Medicine, University of Modena and Reggio Emilia, Reggio Emilia, Italy.

<sup>2</sup>Azienda USL-IRCCS di Reggio Emilia, Reggio Emilia, Italy.

<sup>3</sup>Surgical, Medical and Dental Department of Morphological Sciences related to Transplants Oncology and Regenerative Medicine, University of Modena and Reggio Emilia, Modena, Italy.

<sup>4</sup>Department of Neuroscience, Rehabilitation, Ophthalmology, Genetics and Maternal Child Health, University of Genova, Italy.

Email: [barbara.bressi@ausl.re.it](mailto:barbara.bressi@ausl.re.it)

### Introduction

Androgen deprivation therapy (ADT) is a treatment used in patient with prostate cancer (PCa) but is responsible of many adverse effects: loss of bone mineral density (BMD), cognitive dysfunction and alteration of body composition, increasing the risk of accidental falls and fracture. Physical exercise (PE) has been proposed as a strategy to preserve bone health.

### Objectives

This systematic review aims to analyze the feasibility and effectiveness of PE programme to prevent risk of fall and fracture and the loss of BMD in PCa patients receiving ADT, and determine which dose and components are considered effective and feasible.

### Methodology

We searched MEDLINE, EMBASE, CINAHL and the Cochrane Library including randomized controlled trials (RCTs). Eligible study aimed at assessing the effectiveness of physical exercise programmes on bone health. Characteristics of studies and PE programmes and feasibility outcome data were extracted.

### Results

Nine RCTs were selected including 625 participants (range 51-154) with average age 68,4 (± 1,6) years. It's seems to be there are not differences in adherence for supervised and home-based exercise session, with an average retention rate of 84,3%. There was a greater number of adverse events related to the intervention in the studies in which the football training (soccer) was proposed (10 of the 13 total). The effective exercise programmes consists of resistance exercise (RE) alone or combined with aerobic (AE) and/or impact exercise (IE), or football training.

### Conclusion

There is preliminary evidence that PE interventions are feasible and safe and potentially beneficial for patients with PCa in ADT. It seems that the most effective exercise has the characteristic of being multicomponent, in particular consists of RE and IE. Some evidence has also been shown for the football training that proposes multifaceted activities and with a large number of high-intensity activities.

**Keywords:** Prostatic neoplasms, androgen deprivation therapy, physical exercise, bone density, systematic review

## 157 – Heart rate variability and atrial fibrillation

C Flório<sup>1</sup>, J Pereira<sup>1</sup>, T Pereira<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

Email: [jpereira@estescoimbra.pt](mailto:jpereira@estescoimbra.pt)

### Introduction

AF is the most prevalent arrhythmia in the world, accounting for high rates of mortality and morbidity. It is present in about one third of the ischemic strokes and is associated with double the mortality.

### Objectives

The objective of this study was to analyze the HRV measurements in the Holter registry, trying to correlate them with findings from other studies and parameters that have been established as risk markers for adverse prognosis and death, so that, as with other diseases it were possible to create a risk stratification standard.

### Methodology

We selected 51 cases of AF patients who were matched for sex and age, a control individual in a Holter record-keeping database. The parameters obtained in the Holter registry were compared in both groups, and a subanalysis was subsequently performed by dividing the group with AF in two groups by the median of the SDNN.

### Results

It was observed that in the comparison between the control group and the group with AF, the latter had a lower sympathetic activation than the first one, presenting, however, more parameters described as an increased risk of ventricular arrhythmias or sudden death. However in the sub analysis, it was possible to verify that the group above the median of the SDNN showed a greater sympathetic activation along with parameters considered as risk enhancers of sudden death.

### Conclusion

The present study demonstrates the existence of a set of parameters in individuals with AF that may make possible the creation of groups of greater or lesser risk of adverse events. However, further research is needed to establish robust criteria so that patients who need treatment differently from what is nowadays most frequently used in this particular disease can be identified.

**Keywords:** Heart Rate Variability; Atrial Fibrillation; Risk

## 160 – Technological system BTS G-WALK® to enhance clinical reasoning and decision on the quality of functional ability analysis by physiotherapists

D Guia<sup>1</sup>, T B Felix<sup>1,2</sup>, A C Martins<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

<sup>2</sup>Centro Universitário Saúde ABC, Santo André, Brasil

Email: [daniela\\_guia@hotmail.com](mailto:daniela_guia@hotmail.com)

### Introduction

Technology's role in society has expanded exponentially. Undeniably, a driving force behind quality healthcare is the adoption of technology that enables clinicians as physiotherapists to provide better functional diagnosis and personalized interventions. Gait, strength and balance measurement and analysis are important parameters for physiotherapist's assessment of functional ability. G-WALK® is a small inertial sensor to perform clinical tests such as the Timed Up and Go (TUG) and the 10-meter Walking.

### Objectives

To investigate the contribute of the G-WALK® during functional ability assessment.

### Methodology

Two case studies designed to investigate the TUG and the 10-meter Walking tests. At first, tests were performed in a standardized manner and then using G-WALK®. In one case the tests were performed indoor and outdoor while in another case with and without assistive device.

### Results

The system allows the clinician to assess some additional evaluations, namely the TUG phases in detail (sit-to stand, stand-to sit, turn and walk) and spatiotemporal gait parameters during 10-meter Walking Test (Velocity, Cadence, Step Length, Stride Length, Gait Cycle duration, Stance phase duration, Swing phase duration and Double and single support duration). Moreover G-WALK also provides comparison data with left to right side and to normal rate, assess to pelvic kinematic data in all three planes, symmetries and propulsion, making measurements more efficient and effective to the clinical practice.

### Conclusion

These two study cases confirm that G-Walk is an useful tool to enhance objective assessment of functional ability and bring benefits to the physiotherapist's clinical reasoning supported by a technological device easy to apply.

**Keywords:** Physiotherapy; BTS G-WALK®; Gait analysis; Clinical evaluation; Functional ability.

## 162 – Assessment of Physical Function in Children with Cerebral Palsy: Convergent Validity between the Gross Motor Function Measure and the Activities Scale for Kids

S Costi<sup>1,2,3</sup>, S Alboresi<sup>2</sup>, D Mecugni<sup>3</sup>, A Ferrari<sup>2,3</sup>, E Boggiani<sup>2</sup>, B Bressi<sup>2,3</sup>, S Paltrinieri<sup>2</sup>, E Pelosin<sup>1</sup>

<sup>1</sup>University of Genova (IT)

<sup>2</sup>AUSL – IRCCS of Reggio Emilia (IT)

<sup>3</sup>University of Modena and Reggio Emilia (IT)

Email: [stefania.costi@unimore.it](mailto:stefania.costi@unimore.it)

### Introduction

Introduction: Physical functioning is crucial to participation in life activities and always be accurately assessed in children with cerebral palsy (CP). The Activities Scale for Kids performance (ASKp) is currently used for this purpose, but its psychometric properties have not yet been completely verified in children with CP, which is the principal cause of disability in industrialized countries. Recently, the reliability of the Italian version of the scale has been confirmed in this population and initial proofs validity have been collected. However, there is no gold standard that can serve as a criterion.

### Objectives

This study aims to definitively verify the validity of ASKp in children CP, measuring its convergent validity with respect to the Gross Motor Function Measure-66 (GMFM-66) the gold standard of the assessment of gross motor abilities in this population.

### Methodology

This cross-sectional study provides for a single self-administration of the Italian ASKp to test its convergent validity with respect to the Gross Motor Function Measure-66 (GMFM-66) and to the Gross Motor Function Classification System (GMFCS) in a wide population of children with CP

### Results

Descriptive data will be presented on 80 children with CP, including the distributions of the scores of the two scales and the correlation data between the ASKp and the GMFM and the GMFCS respectively. At present we have data on 73 children with CP, not yet analyzed.

### Conclusion

If data will confirm the validity of the ASKp, which has recently been cross-culturally validated in Portuguese, it can be applied to guide treatment that integrates children's perspective in their rehabilitation process.

**Keywords:** construct validity; outcome assessment; Activities Scale for Kids; cerebral palsy; Gross Motor Function Measure

## 170 – The effects of fallsensing exergames on functional ability in people with intellectual and developmental disabilities combined with physical disabilities – a pilot study

T Pedro<sup>2</sup>, P Francisco<sup>1,2</sup>, D Guia<sup>1</sup>, J Perez<sup>3</sup>, N Almeida<sup>3</sup>, A Martins<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

<sup>2</sup>Associação de Paralisia Cerebral de Coimbra, APCC, Portugal

<sup>3</sup>Universidade Federal do Panamá, UFPR, Brasil

Email: [tgbp@hotmail.com](mailto:tgbp@hotmail.com)

### Introduction

Individuals with Intellectual and Developmental Disabilities (IDD) and also physical disabilities usually have low levels of physical activity participation, not only because of their physiological restrictions but also of social and environmental barriers. This physical inactivity leads to decreased strength, balance, gait and mobility. So, it is important that this group of person have an appropriated and intuitive program, in order to keep them motivated to continue.

### Objectives

The purpose of this study was to evaluate the effects of FallSensing Exergames on functional abilities of persons with IDD and physical disabilities.

### Methodology

Eleven individuals diagnosed with IDD and physical disability were recruited to participate in this study. The intervention, based on the FallSensing Exergames, was implemented for 8 weeks, twice a week. Outcomes for functional ability assessment included golden standard measures, namely, the Grip Strength, Time Up and Go, Step, 4 Stage Balance Modified, Sit-to-Stand and 10-meter Walking Speed tests.

### Results

A significant impact on strength, balance and gait was founded. In general, all the functional tests improved, with the best results for Sit-to Stand, TUG, Grip Strength and 10-meter Walking Speed. In the 4 Stage Balance Modified test and the Step test participants got less score change. High level of motivation and adherence to the program were documented.

### Conclusion

In addition to social interaction and recreation, this case-based study demonstrated that the participants with IDD and physical disabilities can improve their functional abilities while performing Exergames. Although the promising results, Exergames approach needs more research for a robust recommendation to enhance functioning and independence of this specific population.

**Keywords:** Exergames; Functional ability; Intellectual and Developmental Disabilities; Physical disabilities

## 173 – Nutritional knowledge and eating habits of students and collaborators from a Belgian university

S Miranda<sup>1</sup>, J Lima<sup>2</sup>, J Figueiredo<sup>3</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

<sup>2</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

<sup>3</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

Email: [mirandaniela.s@hotmail.com](mailto:mirandaniela.s@hotmail.com)

### Introduction

The universities are study and work places where should be promoted healthy eating habits. The nutritional knowledge is an important determinant of food consumption, since those can contribute for more conscious and correct choices.

### Objectives

Evaluation of the nutritional knowledge level and eating habits of the students and collaborators from a Belgian university and the correlation between these factors.

### Methodology

The nutritional knowledge were evaluated through the application of the Nutritional Knowledge Questionnaire and the eating habits through a questionnaire elaborated by the researchers of the project, in relation to fruit, soup, vegetables and water consumption. The SPSS program was used to the treatment and statistics analysis of the results.

### Results

Of the 109 participants, the consumption of one portion of fruit and  $\frac{1}{4}$  of the plate with vegetables, per day, was the most common answer in 48,6% and 45% of the sample, respectively. The average classification of the nutritional knowledge obtained in the Nutritional Knowledge Questionnaire was 55/110 points. It was observed a positive association between the average consumption of fruit and vegetables and the nutritional knowledge classification ( $p < 0,05$ ).

### Conclusion

In the face of satisfactory results of the nutritional knowledge of the population, the positive association between nutritional knowledge and the food consumption and the lower consumption of health protectors foods, like fruit and vegetables, it is important that the universities promote health and nutrition literacy in their communities to ensure adherence to healthy eating and lifestyle habits.

**Keywords:** nutritional knowledge, eating habits, college campus



## 174 – Clinical practices and complications associated with the peripheral intravenous catheterization of oncology patients: a scoping review protocol

P Santos-Costa<sup>1,2</sup>, LB Sousa<sup>1</sup>, C Costeira<sup>3</sup>, F Santos<sup>3</sup>, A Salgueiro-Oliveira<sup>1</sup>, P Parreira<sup>1</sup>, Margarida Vieira<sup>2,4</sup>, & João Graveto<sup>1</sup>

<sup>1</sup>Unidade de Investigação Ciências da Saúde: Enfermagem da Escola Superior de Enfermagem de Coimbra, Coimbra, Portugal

<sup>2</sup>Universidade Católica Portuguesa - Instituto de Ciências da Saúde, Porto, Portugal

<sup>3</sup>Instituto Português de Oncologia de Coimbra Francisco Gentil, E.P.E., Coimbra, Portugal

<sup>4</sup>Centro de Investigação Interdisciplinar em Saúde, Universidade Católica Portuguesa, Porto, Portugal

*Email: paulocosta.15@gmail.com*

### Introduction

Up to 90% of healthcare users require at least one peripheral intravenous catheter (PIVC) to comply with the established treatment plan. However, this procedure is not risk-free, requiring specific care during PIVC insertion and maintenance. Oncology patients present an increased risk of local and systemic complications associated with PIVCs, motivated by the impairment of their clinical condition and/or need for the intravenous administration of antineoplastic treatment cycles and neoadjuvant therapy. However, the nature and implications of this phenomenon in this clinical cohort are still unstudied.

### Objectives

This review aims to map all studies focused on the peripheral intravenous catheterization of oncology patients, regardless of geographical or clinical settings, systematizing the clinical practices and complication rates identified.

### Methodology

A scoping review following the methodology proposed by the Joanna Briggs Institute will be conducted, using the proposed Participants-Concept-Context mnemonic. A protocol was delineated according to the specificity of each base/repository in order to identify studies that meet the criteria outlined. Two independent reviewers will perform data analysis, extraction, and synthesis, using an instrument specifically designed by the research team. Whenever necessary, the authors of the studies will be contacted with the intent of obtaining further information or clarify data.

### Results

The mapping of the studies developed in this thematic scope will contribute to the dissemination of the existing evidence.

### Conclusion

The authors anticipate that this scoping review will potentiate the identification of the core structure-process-outcome indicators described in the published studies, supporting possible systematic review questions and the definition of future interventions that enhance the efficacy/safety of the care provided to oncology patients with PIVC.

**Keywords:** Peripheral intravenous catheterization; oncology; review

# 175 – Prevalence of anti-plasmodium antibodies in blood donors of the centro hospitalar e universitário de coimbra between 2008-2018

C Ferreira<sup>1</sup>, C Silva Pereira<sup>1</sup>, C Faria<sup>1</sup>, N Syamro<sup>1</sup>, JR Fernández<sup>1</sup>, J Tomaz<sup>1</sup>

<sup>1</sup>Serviço de Sangue e Medicina Transfusional do CHUC, Portugal

Email: celita.ferreira@sapo.pt

## Introduction

Malaria is an infectious disease caused by a protozoan parasite of the genus Plasmodium. Transmission to man is mainly through the bite of the infected female Anopheles mosquito, but can also be transmitted congenitally and by blood transfusion. Transmission of the disease can be curbed by preventing mosquito bites and researching anti-Plasmodium antibodies to blood donors.

## Objectives

Determine the prevalence of anti-Plasmodium antibodies in blood donors that had been to malaria endemic areas, in Centro Hospitalar e Universitário de Coimbra (CHUC), between 2008 and 2018.

## Methodology

From 01/01/2008 to 31/12/2018, 3672 blood donor samples from CHUC, were studied for anti-Plasmodium antibody screening. Enzyme-Linked Immunosorbent Assay (ELISA) methodology was used through the commercial kit “Malaria EIA Test Kit (BioRad, USA), validated for EVOLIS® Premium equipment.

## Results

There were 315 donors (8.6%) with reactive results for the anti-Plasmodium antibody, of which 249 were male (79%) and 66 female (21%).

The number of reactive results in each year was:

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
n	50	77	40	25	30	25	14	14	9	14	17

## Conclusion

The prevalence of anti-Plasmodium antibodies in blood donors, during the 11 years of the study, was 8.6%, with a higher percentage in male donors (79%). Donors with negative results (91.4%) were allowed to return to donate blood again. Reactive blood donors were suspended to prevent transmission by blood transfusion. This type of prevention should include the traceability of malaria by molecular biology to confirm the diagnosis and to determine the Plasmodium species.

**Keywords:** Malaria, blood donors, blood transfusion transmission, anti-Plasmodium antibodies, ELISA, prevalence, prevention

## 176 – Public health promotion on the Internet: mapping of social media of SNS (Portugal) and the Ministry of Health (Brazil)

P Pinto<sup>1</sup>, M Antunes<sup>1</sup>, A Almeida<sup>1</sup>

<sup>1</sup>DigiMedia, Department of Communication and Art, University of Aveiro, Portugal

Email: [pinpamela@gmail.com](mailto:pinpamela@gmail.com)

### Introduction

Social networking sites are being used as health promotion tools. About 80% of World Health Organization members report using these digital platforms for this purpose. Portugal and Brazil defend health as a universal right and have 79% and 64.7% of the population connected.

### Objectives

To map communication strategies used in social media by the National Health Service (NHS) and the Ministry of Health (MS).

### Methodology

Exploratory research based on data from Facebook, YouTube, Twitter and Instagram of NHS and MS (Nov/19).

### Results

Data shows that the MS has had 11 years of expertise in health promotion on the Internet having been used to raise awareness about disease prevention. It has been operating since 2008 through Facebook (2.1 million followers); the Twitter was created in 2009 (716,000 followers). The Youtube was created in 2011 (96,300 subscribers/56 million views). In 2013 the Instagram profile became operational (689,000 followers). With regard to NHS, its insertion in social media dates from 2016, when its YouTube was created (903 subscribers/164,000 views); In 2017 different profiles were created: two profiles on Twitter (NHS and the Minister of Health - 3,200/6,500 followers), Facebook and Instagram (171,000/50,700 followers).

### Conclusion

Characteristics of both countries have been identified. There is a low population adherence to these networks and there is no content matching per channel as campaigns are replicated simultaneously across all networks. There is a predominance of infographics, being Instagram the network that generates the most engagement, expressed in likes, comments on posts, and the largest growth of fans in 2019. There are a variety of health promotion themes, with emphasis on disease prevention. Health promotion loses space for the transmission of institutional material from governments. There is a need to improve communication strategies to broaden dialogue with the population and achieve greater scope for health promotion actions.

**Keywords:** health promotion; public health; social media

## 181 – Dose values in paediatric electrophysiology procedures

A. Rosa<sup>1</sup>, T. Loupa<sup>2</sup>, G. Paulo<sup>1</sup>, J Santos<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

<sup>2</sup>Serviço de Cardiologia do CHULC, Portugal

Email: joanasantos@estescoimbra.pt

### Introduction

The significant advances in science, particularly on Radiation Therapy (RT) field, had an important role to promote and improve patient care and cancer treatments. During this the patients are exposed to radiation related to the RT treatment but also to other examinations that must be quantified.

### Objectives

Characterisation of RT planning and verification radiation exposure excluding the dose values directly related with the treatment.

### Methodology

The dose files related to the Computed Tomography (CT) (Siemens®) and to the Cone Beam Computed Tomography (CBCT) integrated on the Linear Accelerator TrueBeam (Varian Medical Systems®) of 60 patients with prostate cancer were analysed.

### Results

A total of 1252 exams were analysed and the mean values of DLP were 352mGy for CBCT, 791mGy for CT without current modulation and 491mGy for CT with current modulation.

### Conclusion

The effective dose during the planning and verification of the radiation therapy treatment is significant. It's considered essential realize the CT with current modulation to decrease the level of exposure dose of patient.

**Keywords:** Prostate cancer; radiotherapy; radiation

## 183 – Prostate cancer planning and verification radiation exposure levels in during radiotherapy treatment

R Monteiro<sup>1</sup>, M.J. C. Mariano <sup>1,2</sup>, J Santos<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

<sup>2</sup>Serviço de Radioterapia do CHUC, Portugal

*Email: joanasantos@estescoimbra.pt*

### Introduction

Fluoroscopy guided procedures are crucial to diagnose, treat and follow-up congenital heart disease.

### Objectives

This study aims to evaluate paediatric Electrophysiology Cath lab examination doses values, per procedure and age categorisation

### Methodology

Exposure parameters and dose values of paediatric Electrophysiology procedures, performed between 2012 and 2018, was directly collected on Digital Imaging and Communication in Medicine (DICOM) headers and dose files available on the Picture Archiving and Communication System (PACS), in order to analyse the procedure dose values per age groups.

### Results

The most frequent procedure was Radiofrequency Ablation (RFA). With 75, 5037, 6438 and 4332 cGy.cm<sup>2</sup> percentile values, for the age groups with the highest number of patients [10.15[, [15.18[ and ≥18, respectively.

### Conclusion

There was a great variability of procedures and the acquired dose values did not show homogeneity regarding the different age groups and different types of procedures. In order to reduce these differences and, especially, the higher values in children, it is essential to optimize the procedures performed.

**Keywords:** Prostate cancer; radiotherapy; radiation

## 184 – Efficiency dresses green: enzyme-assisted processing of agrowasted senescent vaccinium leaves

<sup>1,2</sup> I Preguiça, <sup>1,2</sup> A Alves, <sup>1,2,3</sup> P Vieira, <sup>1,2,4</sup> S Nunes, <sup>1,2</sup> M Zuzarte, <sup>1,2</sup> F Reis, <sup>1,2,3</sup> S Viana

<sup>1</sup>Institute of Pharmacology & Experimental Therapeutics & Coimbra Institute for Clinical and Biomedical Research (iCBR), Faculty of Medicine, University of Coimbra, Portugal;

<sup>2</sup>CIBB – Center for Innovative Biomedicine and Biotechnology, University of Coimbra, Portugal;

<sup>3</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal;

<sup>4</sup> Faculty of Pharmacy, University of Coimbra, Portugal.

Equally contributed

Email: [i.preguica@campus.fct.unl.pt](mailto:i.preguica@campus.fct.unl.pt)

### Introduction

Vaccinium spp. shrubs are worldwide recognized by their small edible blueberry (BB) fruits with well-established medicinal value largely stemming from their polyphenolic (PP) content. Yet, alternative sources of these bioactive compounds may arise from other parts of the plant, namely the leaves, currently a wasted byproduct of harvesting with great nutraceutical potential. Strong evidences pinpoint PP enrichment in the leaf versus the fruit, but scarce data is available from senescent ones. Moreover, a lack of alternative and sustainable methods for senescent Vaccinium spp. leaves (VL) biomass processing subsists.

### Objectives

To optimize an eco-friendly biotechnological approach combining physical and enzymatic-assisted methods for VL biomass processing towards human nutraceutical purposes.

### Methodology

A ratio of 1:10 leaf dry-matter powder:30% ethanol (pH 5) was subjected to high shear agitation using Ultra-Turrax® turbolysis apparatus (24 000rpm, 20 minutes under an ice bath), followed by enzymatic cellulase (CEL) digestion (2 or 12 hours). To evaluate cell wall integrity, samples were visualized in Scanning Electron Microscope (SEM). Total phenolic content (TPC) was quantified through the Folin-Ciocalteu assay and expressed as % of turbolysis condition. Values are means ± S.E.M.

### Results

SEM analysis revealed an irregular pattern of cellulose microfibril orientation and cell wall thickness 2h-post CEL treatment that become more pronounced following 12h of enzymatic digestion. Moreover, VL biomass CEL processing promoted an increase of 18.50 ± 2.50% and 32.30 ± 7.00% of TPC following 2h and 12h of treatment, respectively. Remarkably, 12h of CEL digestion promoted a 23.87-fold increase of TPC content in VL biomass when compared to BB fruits.

### Conclusion

Even though future studies are needed, these findings pave the way for a new environment friendly approach for VL biomass obtaining with tremendous potential in the nutraceutical field.

**Keywords:** Blueberry leaves biomass; sustainable approach; total polyphenolic content

## 187 – Putative harmful effects of blueberries' chronic supplementation in healthy conditions

S Nunes<sup>1,2,3</sup>, SD Viana<sup>1,2,4</sup>, A Alves<sup>1,2</sup>, I Preguiça<sup>1,2</sup>, MA André<sup>4</sup>, AP Rolo<sup>5,6</sup>, CM Palmeira<sup>5,6</sup>, C Cavadas<sup>2,3,5</sup>, MM Pintado<sup>7</sup>, F Reis<sup>1,2</sup>

<sup>1</sup>Institute of Pharmacology & Experimental Therapeutics, Coimbra Institute for Clinical and Biomedical Research (iCBR), Faculty of Medicine, University of Coimbra, Portugal;

<sup>2</sup>CIBB – Center for Innovative Biomedicine and Biotechnology, University of Coimbra, Portugal;

<sup>3</sup>Faculty of Pharmacy, University of Coimbra, Portugal;

<sup>4</sup>Polytechnic Institute of Coimbra, ESTESC-Coimbra Health School, Pharmacy, Portugal;

<sup>5</sup>Center for Neurosciences and Cell Biology of Coimbra, University of Coimbra, Coimbra, Portugal; <sup>6</sup>Department of Zoology, University of Coimbra, Coimbra, Portugal;

<sup>7</sup>CBCQF - Center for Biotechnology and Fine Chemistry, Associated Laboratory, School of Biotechnology, Catholic University of Portugal/Porto, Portugal.

*Email: sara\_nunes20@hotmail.com*

### Introduction

Blueberries (BB), considered as antioxidant superfoods, are enriched in a wide range of bioactive compounds with recognized benefits (e.g. probiotic, hypoglycemic) on metabolic disorders. However, long-term effects of BB supplementation in healthy remains misty, regardless the worldwide boost of consumption.

### Objectives

The main goal of present work was to experimentally assess the long-term effects of BB supplementation on healthy animals.

### Methodology

Male adult Wistar rats were randomly divided into Control (CTRL; tap water) and BB juice (BJ) (25 g/kg body weight (BW)/day) groups (n=8 each), in a 14 weeks' protocol (equivalent to 9-10 years of human life). The following data were evaluated: i) markers of glycemic, insulinemic and lipidic profiles; ii) serum LPS/hsCRP, metabolic profiling (1H NMR) and redox status parameters (UV-Vis absorbance); iii) faecal gut microbiota (GM) and SCFAs composition (by qPCR and HPLC-IR); iv) intestinal gene/protein expression of tight junctions (RT-qPCR, WB) and ultrastructural visualization (TEM); v) hepatic function, imaging and histology (serum enzymes, ultrasonography and staining techniques; vi) liver mitochondrial bioenergetics assays.

### Results

There were no changes on BW nor in metabolic profile of BJ-treated rats vs CTRL ones. BJ was also unable to affect GM, gut barrier structure and systemic inflammation. Notably, a robust subcellular negative impact was observed on hepatic mitochondrial bioenergetics despite the lack of histological changes.

### Conclusion

Our novel data suggest a harmful outcome of chronic BJ intake in healthy animals, as viewed by the consistent hepatic mitochondrial impairment. Yet, future studies are.

**Keywords:** Chronic blueberries supplementation; Hepatic mitochondrial impairment; Health status

## 189 – Hearing in elderly with cardiovascular diseases

A Martins<sup>1</sup>, C Nazaré<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

Email: [cristinanazare@estescoimbra.pt](mailto:cristinanazare@estescoimbra.pt)

### Introduction

Hearing loss in the elderly (presbycusis) and its consequences such as communication difficulties and dementia, raise questions that still remain under discussion about possible causes or risk factors. These can be diverse as age, neurological problems, over medication, metabolic and vascular changes, among others.

### Objectives

To compare the auditory thresholds and the amplitude of the otoacoustic emissions in elderly with and without cardiovascular diseases.

### Methodology

The sample of this study consisted of 20 elderly (13 females; 7 males) divided into 2 groups (10 with cardiovascular diseases - hypertension and cholesterol and 10 without) with ages from 65 to 95 years (mean:  $83.7 \pm 9.71$ ). Pure tone audiogram by air conduction (0.25 to 8 KHz) and distortion product otoacoustic emissions (2 to 8 KHz) was tested.

### Results

Although no statistically significant differences were found between groups the results revealed that the averages of the auditory thresholds of all frequencies were better in the elderly without cardiovascular diseases and that the averages of the amplitudes of the DPOAE were lower in the elderly with cardiovascular diseases at all frequencies of the right ear, except for 5 KHz and in the left ear in the frequencies of 2 and 4 KHz.

### Conclusion

It is concluded that the auditory thresholds of the elderly with cardiovascular diseases are higher than those of the elderly without cardiovascular diseases and that the amplitudes of the DPOAE are lower in the elderly with cardiovascular diseases in most frequencies. Previous studies suggest that this fact may be related to differences between groups in the cochlea microcirculation. In view of this, prevention and monitoring of hearing and adequate medication for cardiovascular diseases are essential so that presbycusis and cognition and consequently the quality of life are not aggravated by the existence of diseases such as hypertension and cholesterol.

**Keywords:** Hearing, presbycusis, elderly cardiovascular diseases, hypertension, cholesterol, otoacoustic emissions



## 190 – Relationship between plantar pressure, mobility, balance and risk of fall in elderly diabetic.

M Saraiva<sup>1</sup>, R Gonçalves<sup>2</sup>, L Santiago<sup>3</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

<sup>2</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

<sup>3</sup>Unidade de Saúde Familiar Topázio - Coimbra

Email: [marina.saraiva@outlook.com](mailto:marina.saraiva@outlook.com)

### Introduction

Diabetes Mellitus (DM) is a major public health problem and growing worldwide.

### Objectives

To determine the correlation between plantar pressure (PP), functional mobility, balance and risk of fall in elderly with DM type 2. To analyze the influence of body mass index (BMI) and age in those variables. Identify the parameters that are most compromised and associated, with view to support the implementation of future intervention strategies.

### Methodology

This cross-sectional, observational, descriptive, correlational study, with convenience sampling, was conducted with 101 elderly with DM type 2 (mean±SD=73,95±6,16 years) in a Topázio Family Health Unit. To assess the risk of fall, functional mobility, balance and static PP, were used a Falls Efficacy Scale (FES), Time Up & Go Test (TUG), Berg Balance Scale (BBS) and plantar pressure platform EcoWalk respectively. It was considered a significance level of  $p < 0,05$ .

### Results

In correlation between PP, balance, mobility and risk of fall, it was found that PP doesn't present a statistically significant correlation with those variables ( $p > 0,05$ ). The balance and risk of fall were negatively correlated with the mobility ( $\rho = -0,657$  and  $p = 0,000$ ;  $\rho = -0,530$  and  $p = 0,000$  respectively). Between balance and risk of fall there was a positive and statistically significant correlation ( $\rho = 0,552$ ;  $p = 0,000$ ). BMI and age correlation with the PP weren't statistically significant ( $p > 0,05$ ). It was obtaining an inverse statistically significant correlation between BMI and balance and between the BMI and risk of fall, the same was verified to the age variable.

### Conclusion

PP doesn't correlate with functional mobility, balance and risk of fall in elderly with DM type 2. Forefoot PP, hindfoot and midfoot percentage of load distribution that correlate with balance and mobility. Considering the changes observed in the elderly with DM type 2, the implementation of strategies to minimize or prevent the consequences of these parameters becomes relevant.

**Keywords:** Diabetes Mellitus, Plantar Pressure, Functional Mobility, Balance, Risk of Falls.

## 191 – Evaluation of uric acid and nitric oxide levels with hydrotherapy in a senior population

M Morais<sup>1</sup>, S Fortes<sup>1</sup>, J Rosado<sup>2,3</sup>, C Domingues<sup>3</sup>, A Fernandes<sup>3</sup>, A Lopes<sup>3</sup>, J Figueiredo<sup>4</sup>, R Barreira<sup>1,5</sup>, A Caseiro<sup>1,6</sup>, A Valado<sup>1,7</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Departamento de Ciências Biomédicas Laboratoriais

<sup>2</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Departamento de Fisioterapia

<sup>3</sup>Centro Rainha Santa Isabel, Cáritas Diocesana de Coimbra

<sup>4</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Departamento das Ciências Complementares, Coimbra

<sup>5</sup>Centro Hospitalar e Universitário de Coimbra, Serviço de Sangue e Medicina Transfusional, Hospital Geral

<sup>6</sup>Unidade I&D Química-Física Molecular, FCTUC, Coimbra

<sup>7</sup>MARE (Centro de Ciências do Mar e do Ambiente), FCTUC, Coimbra

Email: [marcinhamorais1997@gmail.com](mailto:marcinhamorais1997@gmail.com)

### Introduction

The practice of hydrotherapy is highly recommended for the senior population, given to the characteristics of the exercise with lower strength, muscle endurance and energy expenditure compared to normal physical activity. The aging process is related to increased oxidative stress, which is harmful to the body. Uric acid and nitric oxide are

antioxidant molecules, with the function of neutralizing the excess of oxidizing species and may increase, with physical exercise to combat reactive species and, consequently, oxidative stress.

### Objectives

The aim of the research was to evaluate the levels of uric acid and nitric oxide in the population aged  $\geq 60$  years, when they practiced hydrotherapy.

### Methodology

This study involved 37 individuals distributed in two groups; the experimental group which performed two venous blood collections: T0 at the beginning of treatment and T1 after 15 hydrotherapy sessions, and the control group did not practice hydrotherapy and only performed one venous blood collection. Uric acid levels were determined using the Prestige 24i autoanalyzer according to the LQ UA Kit, and for nitric oxide, the Total Nitric Oxide and Nitrat/Nitrite kit. The statistical treatment was performed using IBM SPSS program.

### Results

The experimental group showed an increase in mean uric acid values from  $4.63 \pm 1.16$  mg/dL at T0 to  $5.02 \pm 1.29$  mg/dL at T1. The control group recorded uric acid levels of  $4.63 \pm 1.00$  mg/dL. Nitric oxide in the experimental group increased from  $10.63 \pm 6.76$   $\mu$ mol/L at T0 to  $11.94 \pm 6.40$   $\mu$ mol/L at T1.

### Conclusion

With regular hydrotherapy practice, uric acid and nitric oxide levels tend to increase and this is beneficial for quality of life. Since the addition of antioxidants will neutralize reactive species, indirectly reducing oxidative stress, reducing organism damage that improves quality of life, slowing the aging process.

**Keywords:** hydrotherapy; aging; oxidative stress; uric acid; nitric oxide; exercise

## 196 – Postural control in preterm infants, before and after an intervention based on bobath concept

Cristina Correia<sup>1,2</sup>, Cláudia Silva<sup>1,3</sup>, Alexandra Ribeiro<sup>2</sup>, Rubim Santos<sup>1,3</sup>

<sup>1</sup>ESS-PP – Escola Superior de Saúde do Politécnico do Porto

<sup>2</sup>Fisiokids – Clínica especializada em reabilitação pediátrica

<sup>3</sup>CIR – Centro de Investigação em Reabilitação

Email: [ccs@ess.ipp.pt](mailto:ccs@ess.ipp.pt)

### Introduction

Premature birth is associated with changes in the development process of the central nervous system as well as in the movement experiences, interfering with the maturation of postural control mechanisms which form the basis for efficient movement. Preterm infants who have no identified central nervous system lesions are considered healthy without or with minimal follow-up which may have repercussions on future life.

### Objectives

To evaluate the organization of postural control in preterm infants without neurological injury, associated with exploration of an object in the sitting position, before and after a 12-week physiotherapy intervention plan according to the Bobath Concept in Pediatrics.

### Methods

The sample consisted of 5 preterm infants without neurological injury. An initial evaluation was performed which was the basis for the clinical reasoning process and the elaboration of an intervention plan and also a final evaluation after the 12 weeks of intervention. Assessment moments included an observational analysis of the movement components with photographic record, evaluation with Alberta Infant Motor Scale and analysis of the center of pressure displacement at the base of support through a force platform.

### Results

Observational analysis showed improvements in the organization of postural control mechanisms in all children. The assessment with Alberta Infant Motor Scale reported higher scores in the final evaluation. In a global way there was an increase in variation of the center of pressure displacement.

### Conclusion

All children showed a positive change in the organization of trunk postural control mechanisms after the physiotherapy intervention.

**Keywords:** Development, variability, motor-sensory experiences, physiotherapy

## 197 – Reshaping menu description for a better health and a better future

A Rocha<sup>1,2,3</sup>, JPM Lima<sup>2,3,4,5</sup>, C Viegas<sup>6,7</sup>

<sup>1</sup> Faculdade de Ciências da Nutrição e Alimentação da Universidade do Porto, Portugal

<sup>2</sup> LAQV-Requimte – Porto, Portugal

<sup>3</sup> GreenUPorto - Sustainable Agrifood Production

<sup>4</sup> Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

<sup>5</sup> CiTechCare - Center for Innovative Care and Health Technology

<sup>6</sup> Escola Superior de Hotelaria e Turismo do Estoril, Portugal

<sup>7</sup> CITUR- Centre for Tourism Research, Development and Innovation

Email: [claudia.viegas@eshte.pt](mailto:claudia.viegas@eshte.pt)

### Introduction

Nowadays a wide broad of scientific evidence is available supporting the need to change food systems, reducing consumption of animal products and promoting plant-based food patterns, as imperative not only for health but also for sustainability. The opposite of that is observed in menus description, where meat or fish are always highlighted, leaving the vegetable component to the end, or not even being mentioned, contrary to nutritional recommendations. Nudging strategies are recommended to influence the perception and consumption of individuals.

### Objectives

To evaluate the impact of menu description order/change, emphasizing vegetables, on the perception of consumers about it.

### Methodology

Using a weekly menu developed for a public canteen, the description of the dishes was changed, stating the vegetable components first and the animal components for last. The menu was available and published as usual, during the whole week. Consumers were asked to fulfil a questionnaire at the end of the week.

### Results

A total of 87 individuals fulfil the questionnaire, 50% male and 47% female, with ages between 15 and 41 years old ( $x=20,8 \pm 5,49$ ). 45% stated they had noticed the changes, while 55% did not. From those who perceived the changes only 9 people were accurate. Some individuals perceive that the menu has more healthy options and more vegetarian meals. Individuals attribute the change weight control, health and nutrition and sustainability awareness. No differences were found between sex or individuals who notice or did not notice the change. 74% consider this to be a positive change.

### Conclusion

Health, nutrition and sustainability concerns imply an effort to lead consumers to plant based diets, reducing meat consumption. Nudging strategies regarding plant foods, seems to positively affect consumer's perception about the meal that is being served, what may help to promote plant-based diets, whereby should be implemented.

**Keywords:** menus, health and nutrition, sustainability, plant-based diets

## 198 – Ultra-Processed foods vs. cancer: perspective of an oncology center in Macaé, Brazil

TP Araujo<sup>1,2</sup>, C Ferreira<sup>3</sup>, SH Noia<sup>3</sup>, LR Pimentel<sup>3</sup>, IG Cardoso<sup>3</sup>, R Melquiades<sup>3</sup>

<sup>1</sup>Universidade do Porto, Portugal

<sup>2</sup>Prefeitura Municipal de Macaé, Brasil

<sup>3</sup>Universidade Federal do Rio de Janeiro, Brasil

Email: taissa.pereira@gmail.com

### Introduction

Cancer is a public health problem of great impact, and is the second leading cause of death in the world. One of the protective factors against cancer is a health food, rich in fruits and vegetables, while the consumption of processed and smoked meat are risk factors. NOVA classifies foods according to the degree of processing into 4 distinct groups, the fourth group being ultra-processed foods. A recent study showed an association between consumption of ultra-processed foods and cancer (Fiolet et al 2018).

### Objectives

To evaluate the consumption of ultra-processed foods among cancer patients treated by the Brazilian Health System in Macaé and verify the correlation with the consumption of fruits and vegetables (FLV).

### Methodology

This is a cross-sectional study, which evaluated 14 patients from the Oncology Center from March to June 2018. Anthropometric measures (weight, height, PCT, waist circumference) and food intake were evaluated through a 24 hour register. To evaluate the consumption of ultra-processed foods, the NOVA classification was used (Monteiro, 2010). Pearsons correlation coefficient was used to evaluate the correlation between the consumption of ultra-processed foods and of fruits and vegetables. Statistical analyzes were performed using IBM SPSS version 25®.

### Results

Most of the patients studied were women (93%), aged between 24 and 70 years and media of 52 years (SD 13.52). The mean BMI found was 26.6 (overweight) The mean of meals taken was 4.2 meals per day. The majority of patients (85.7%) consumed ultraprocessed at least one meal, and 42.9% consumed ultraprocessed in 2 or 3 meals. More than half of patients consumed one or two portions of FLV per day, and no patient reported consuming five or more portions of FLV per day.

### Conclusion

The consumption of ultra-processed foods was present in most meals of the patients studied, while the consumption of fruits and vegetables was below WHO recommendations. These findings show the need more strong studies to analyse the relationship between cancer and ultraprocessed food.

**Keywords:** Ultra-processed Food; Cancer; Oncology; Risk factors

## 199 – Study of the prevalence of SLCO1B3 (G699A) polymorphism in the portuguese population

Fábio Rodrigues<sup>1</sup>, Vera Ribeiro<sup>2</sup>

<sup>1</sup>. Faculdade de Ciências e Tecnologia, Universidade do Algarve, Faro, Portugal

<sup>2</sup>. Laboratório de Farmacogenómica e Toxicologia Molecular, CCMAR e CBMR, Universidade do Algarve

Email: [fabiorodrigues1314@hotmail.com](mailto:fabiorodrigues1314@hotmail.com)

### Introduction

SLCO1B3 is a cell influx protein belonging to a carrier superfamily, referred to as the SLC (Solute Carriers) superfamily and composed of over 400 membrane proteins. In addition to mediating transport the active substances in many of the known therapeutic drugs, these proteins perform specific nutrient absorption functions such as amino acids, vitamins and glucose in different cell types. The presence of polymorphisms in the genes encoding these proteins may lead to differences between individuals in how they respond to medicines.

### Objectives

This study aims to determine the genotypic and allelic frequencies of the SLCO1B3 polymorphism G699A in the Portuguese population.

### Methodology

A specific PCR-RFLP technique was developed and applied for the identification of rs7311358 (G699A) genetic polymorphism in human DNA samples from the Portuguese population (n = 89).

### Results

The obtained results showed that the variant A allele has a prevalence of about 70% in the Portuguese population. The Hardy-Weinberg equilibrium evaluation showed that the sample of the Portuguese population analysed does not comply with the principles of this equilibrium.

### Conclusion

The results obtained were compared with data from other populations previously characterized in other studies. Portugal showed similarities with the Mexican, Chinese, and Japanese populations for this polymorphism. This polymorphism may affect the health of many individuals, since it alters the metabolism for different drugs, resulting in different physiological concentrations, eg., in the treatment of various pathologies, such as malignant tumours or in the prevention of rejection in organ transplantation. Thus this study aimed to contribute to the knowledge in this area, determining the genotypic and allelic distributions in Portugal, and highlighting the importance of further complementary studies in this field.

**Keywords:** SLC, SLCO1B3, Polymorphism, Ethnicity, Portuguese Population, Pharmacogenomics, G699A, rs7311358

## 200 – Effect of videogame on postural balance

J Costa<sup>1</sup>, C Nazaré<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC Coimbra Health School, Portugal

Email: joaohrcosta@gmail.com

### Introduction

The video game industry is a business area that has evolved exponentially, increasing the number of sales and players, mostly teenagers and young adults. We are increasingly living in a technological and virtual reality world and as a result we also can see an increase in the number of hours spend playing and also can see video game players have balance changes among other symptoms such as difficulty focusing, headache, dizziness and nausea.

### Objectives

This study aims to evaluate the effect of video game stimulation on the postural balance.

### Methodology

We used the subjective visual vertical (SVV) test and the modified clinical test of sensory interaction on balance (mCTSIB) of dynamic posturography. The tests were performed in 11 male players (20.09 ± 1.7 years) before and after stimulation during 35 minutes with video game Portal 2 (first-person perspective game) in the dark. Eight of the subjects had never played first person games and 6 subjects play video games 2 or more hours a day.

### Results

Comparing the results obtained before and after the stimulation, it was observed in all subjects that there is a greater postural oscillation after the video game stimulus in all positions of the mCTSIB test. Regarding the SVV test there were no visible changes. It was also be observed that individuals with longer playing time oscillate less than those with less experience. One subject had to leave the experience for being unwell during stimulation.

### Conclusion

Results of SVV may possibly indicate that the utricle was not affected by this stimulation. It can be concluded that video game stimulation may be responsible for a change in postural balance and can affect and be a risk to their safety. This increase in body oscillation resulting from video game stimulation may be related to the conflict caused by stimulation between the visual system and the vestibular system - simulator sickness.

**Keywords:** balance; video game; video game players; modified clinical test of sensory interaction on balance (mCTSIB); subjective visual vertical;

## 204 – Vegetable jelly (E407) intake and reduction of total cholesterol

M Pereira<sup>1</sup>, H Loureiro<sup>1</sup>, JP Figueiredo<sup>1</sup>, C Almeida<sup>2</sup>, L Pereira<sup>3</sup>, A Caseiro<sup>1,4</sup> e A Valado<sup>1,3</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

<sup>2</sup>Condi Alimentar, S.A.- Camarate, Portugal

<sup>3</sup>MARE (Centro de Ciências do Mar e do Ambiente) of the University of Coimbra

<sup>4</sup>Unidade I&D Química-Física Molecular of the University of Coimbra

Email: fpereiramaría@hotmail.com

### Introduction

Cardiovascular diseases (CVDs) represent the leading cause of death worldwide. Hypercholesterolemia is considered the main risk factor for its development, being Total Cholesterol (TC) the main target in the prevention of CVDs. Vegetable jelly contains carrageenans (E407), a long-chain polysaccharide presents in marine redmacroalgae (Rhodophyta), industrially used as a gelling agent with high and vast bioactive potential. The action of carrageenans on the lipid profile is directed to the gastrointestinal tract, leading to increased volume and viscosity of the intestinal content, capture and consequent bile acid excretion and lipase inhibition, leading to decreased absorption of exogenous cholesterol.

### Objectives

The objective was to evaluate the bioactive potential of carrageenans through the ingestion of vegetable jelly in the lipid profile: TC, triglycerides (TG), high density lipoprotein cholesterol (HDL-C) and low density lipoprotein cholesterol (LDL-C).

### Methodology

The research was pioneer, comprising 30 individuals aged between 20 and 64 years, who ingested 100 mL/day of vegetable jelly (product available on commercial surfaces), preferably after dinner, for 60 days. All participants were collected two blood samples, before starting the intake (T0) and after two months (T1). In both moments, the parameters CT, TG, and C-HDL were quantified by spectrophotometry and C-LDL by application of Friedewalds formula and p values<0.05 were considered statistically significant.

### Results

The results after two months of daily jelly intake revealed at T1 relative to T0 a statistically significant decrease in TC concentrations (5.3%) and LDL-C compared to women (5.4%).

### Conclusion

Concluding, the bioactive potential of carrageenans in reducing TC was confirmed. So, the regular ingestion of vegetable jelly is a healthy way to prevent CVDs.

**Keywords:** Carrageenan; TC; HDL-C; LDL-C; TG; reduction TC



## 207 – Sound localization and temporal ordering of sounds – parents and teachers’ perception of children’s auditory behaviors before and after music classes in the school.

F. Lima-Alves<sup>1,2</sup>, L. Desgualdo- Pereira<sup>1,3</sup>

<sup>1</sup> Dept of Speech, Hearing and Language Pathology – UNIFESP – São Paulo, Brasil.

<sup>2</sup> Postgraduate master degree student

<sup>3</sup> Associate Professor

Email: [fran.lima.28.12@gmail.com](mailto:fran.lima.28.12@gmail.com)

### Introduction

Many researchers conduct studies on the correlation of spatial auditory processing ((DAHMEN et al, 2010).

### Objectives

Evaluate the auditory abilities of sound localization and temporal ordering of sounds of 1st to 5th graders, and the daily auditory behavior reported by parents and teachers before and after attending a regular program of music lessons in the school.

### Methodology

42 students, enrolled in Elementary Education I, participated of music lessons lasting 45 minutes per week during one semester. They were submitted to sound localization and temporal ordering evaluation and their parents and teachers were interviewed using the Scale of Auditory Behaviors (SAB) on daily auditory behavior. These evaluations were performed before and at the end of the period of music classes. Data were compared by statistical analysis, considering each school year.

### Results

The performance in the evaluations for the 1st and 2nd year students were similar in the moments before and after the music classes. Improvements in auditory behavior were observed in the 5th grade attendees reported by parents and improvements in the 4th grade attendees reported by teachers. The childrens performance did not change in the perception of parents and teachers regarding hearing, comprehension and attention domains of the questionnaire. In the perception of parents there was a statistically significant improvement in the learning domain, different from the perception of teachers after music lessons.

### Conclusion

The auditory behavior of children perceived by parents demonstrated the effect of music lessons on learning activities, while it did not occur on teachers perception. Regarding the localization and temporal ordering skills of sounds, it was found that they did not change after music lessons.

**Keywords:** Keywords: auditory perception; music; questionnaire; children

## 210 – Unhealthy eating perception and BMI inadequacy in university students

A Loureiro<sup>1</sup>, C Lopes<sup>1</sup>, J Lima<sup>1</sup>, J Figueiredo<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

Email: *adri-loureiro-7@hotmail.com*

### Introduction

According to the literature, an unbalanced food intake is associated with inadequate body mass index (BMI). However, the perception of own food habits and the adequacy of them could influence the eating behavior and consequently the BMI.

### Objectives

To analyze the relation between the perception of unbalanced eating and the inadequacy of BMI, in university students.

### Methodology

A retrospective observational cross-sectional study was conducted using a self-applied questionnaire to understand if students consider themselves to have an healthy diet. The sampling technique is a non-probabilistic type, using a convenience sample based on randomness criteria. Data collection took place between March and April 2018, and 104 individuals were surveyed. The anthropometric evaluation was also performed, obtaining the weight and the height, and the BMI was calculated later. Data analysis was performed using the Statistical Package for Social Sciences software version 25.0.

### Results

Respondents were aged between 18 and 46 years old, and most were from female gender. It was found that 70.2% of the students surveyed considered themselves to have an healthy diet. Considering anthropometric analysis, 76% of students were normoponderal and 20.2% were overweight. It was found that 69.2% of the students had a response according to their BMI classification.

### Conclusion

It was observed a good matchup related to students perception regarding the adequacy of their diet and their BMI. However, it is important to develop awareness actions on the promotion of food literacy, as a way to improve the perception about individual food consumption..

**Keywords:** Body mass index, healthy diet, university students, unhealthy eating perception

## 211 – Barriers to healthy eating in university students

C Lopes<sup>1</sup>, A Loureiro<sup>1</sup>, J Lima<sup>1</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

Email: [cristiana.o.lopes@hotmail.com](mailto:cristiana.o.lopes@hotmail.com)

### Introduction

University students diets may change with the enrolment in university, being characterized usually as inadequate considering nutritional needs of the students. These eating habits can be justified by various conditions, which depend on the individuality of each student and their motivations. To promote proper nutrition in university students, it is necessary to act on the causes of their behaviour.

### Objectives

To identify the barriers to healthy eating in university students.

### Methodology

A retrospective observational cross-sectional study was conducted using a self-applied questionnaire to understand if students consider themselves to have an healthy diet or not and the reasons for unhealthy eating habits. The sampling technique is non-probabilistic, based on randomness criteria and a convenience sample. The nine causes main identified in the literature were show and the respondents select all the answers they want. Data collection took place between March and April 2018, and 104 individuals were surveyed.

### Results

The reasons given most frequently by respondents to justify not having healthy eating habits are related to the lack of time to prepare meals (24%), followed by lack of knowledge in the area of healthy eating (12%) and lack of culinary skills ( 8%). It should be noted that 7% of individuals refer the fact that they do not like healthy food as a barrier to the practice of healthy eating.

### Conclusion

These results demonstrate that the main factors conditioning the practice of an healthy diet in the evaluated individuals are related with individual issues. This knowledge could contribute to define an healthy eating promotion strategy more adjusted to the individuals' needs.

**Keywords:** Healthy eating, university students, barriers to healthy eating

## 218 – Inadequacy of sodium and potassium intakes according with different methodological approaches – subsample of participants of imc salt project

T Silva-Santos<sup>1</sup>, C Gonçalves<sup>1,2,3</sup>, O Pinho<sup>1,4</sup>, R Oliveira<sup>1</sup>, A Macedo<sup>1</sup>, P Moreira<sup>1,3,5</sup>

<sup>1</sup>Faculdade de Ciências da Nutrição e Alimentação da Universidade do Porto, Portugal

<sup>2</sup> Centro de Investigação em Atividade Física, Saúde e Lazer, Porto, Portugal

<sup>3</sup> Universidade de Trás-os-Montes e Alto Douro, Portugal

<sup>4</sup> REQUIMTE, Laboratório de Bromatologia e Hidrologia, Faculdade de Farmácia, Universidade do Porto, Portugal

<sup>5</sup> Instituto de Saúde Pública da Universidade do Porto, Portugal

Email: [taniiasilvasantos@gmail.com](mailto:taniiasilvasantos@gmail.com)

### Introduction

There are different approaches among international organizations to estimate the prevalence of inadequate sodium (Na<sup>+</sup>) and potassium (K<sup>+</sup>) intake. The World Health Organization (WHO) and the European Food Safety Authority (EFSA) advise the same recommendations, but Dietary Reference Intakes (DRI, 2019) consider not only safe and Adequate Intakes (AI), but also the evidence on Chronic Disease Risk Reduction Intake (CDRR) for K<sup>+</sup> and Na<sup>+</sup>.

### Objectives

Analyze nutritional adequacy and chronic disease risk reduction of sodium and potassium intakes in a sample of workers from a public university according different international recommendation

### Methodology

Our sample of subjects is a subsample of the iMC Salt project, a randomized clinical trial (NCT03974477, ClinicalTrials.gov), which is still ongoing. This subsample has 30 university workers who meet the eligibility criteria and are enrolled in occupational health appointments. Na<sup>+</sup> and K<sup>+</sup> excretion were measured by one 24-h urinary collection. Urinary Na<sup>+</sup> excretion was compared with: WHO/EFSA (<2000mg/day), AI (<1500mg/day) and CDRR (<2300mg/day), recommendations. Urinary K<sup>+</sup> excretion was compared with: WHO/EFSA (>3500mg/day) and AI (3400 mg/day in men and 2600 mg/day in women), recommendations. Statistical analysis was conducted using IBM SPSS Statistics 26.0.

### Results

Thirty participants were evaluated, were on average 48 years old. The mean Na<sup>+</sup> excretion was 2850 ± 1240mg/day and the mean of K<sup>+</sup> excretion was 2659 ± 738. Comparing urinary Na<sup>+</sup> excretion with WHO/EFSA, AI and CDRR recommendations we found that 70.0%, 96.7% and 56.7% of participants were above the cut-off, respectively. Comparing urinary K<sup>+</sup> excretion with WHO/EFSA and AI recommendations we found that 86.7% and 60.0% of participants exhibited K<sup>+</sup> intake below recommendations, respectively.

### Conclusion

We conclude that by analyzing adequacy and toxicity of Na<sup>+</sup> and K<sup>+</sup> according to different recommendations we obtained different results.

**Keywords:** Sodium, potassium, 24hour urine collection, recommendations adequacy

## 222 – Wearable technology for muscle activity measurement in functional activities

J Marouvo<sup>1,4,6</sup>, J Afonso<sup>3,4</sup>, MA Castro<sup>1,5,6</sup>, R Mendes<sup>2,3,6</sup>, A Figueiredo<sup>3</sup>, MS Couceiro<sup>4</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

<sup>2</sup>Instituto Politécnico de Coimbra, ESEC – Escola Superior de Educação, Portugal

<sup>3</sup>Faculdade de Ciências do Desporto e Educação Física (FCDEF.UC/CIDAF), Universidade de Coimbra, Portugal.

<sup>4</sup>Ingeniarius, Ltd., Coimbra, Portugal.

<sup>5</sup>CEMMPRE Universidade de Coimbra, Portugal

<sup>6</sup>Laboratório RoboCorp - Instituto Politécnico de Coimbra, Portugal

Email: [duartemarouvo@gmail.com](mailto:duartemarouvo@gmail.com)

### Introduction

Clinical analysis is necessary to record high accuracy data from neuromuscular activation. Though its use can be restricted in several tasks and exercises, conditioning the ecological dynamics inherent to real practice conditions. Textile EMG electrodes, deployed in clothing, allow to assess muscle activation in many tasks without imposing such constraints. Yet, the wearable technologies ability to assess muscle activity when compared with clinical analysis remains largely not studied.

### Objectives

This paper compares electromyography (EMG) based wearable textile with clinical analysis in the assessment of the lower-limbs myoelectric muscle activation during various tasks.

### Methodology

Four active males (22.5±3yrs) participated in the validation study. To investigate the wearable technology accuracy, participants completed a specific protocol, performing walking, running, strength exercise, cycling and stepping tasks. Participants wore both wearable and gold standard EMG recorder simultaneously, measuring quadriceps, hamstrings and gluteal myoelectrical activity of both legs. Recorded data were identically processed to provide average rectified values.

### Results

Results were compared across systems devices and demonstrated weak correlations in highly dynamic tasks, like a continued walking, ramp-up and running exercise (0,30±0,06) and cycling (0.25±0.07). Stepping demonstrated moderate correlation (0.48±0.20), while a strong correlation was observed when performing strength exercises (0.76±0.10).

### Conclusion

According to the results, the wearable surface EMG recorder is not as accurate as the traditional device to acquire neuromuscular activation during dynamic tasks. Depending upon the activity textile EMG integrated within wearable technologies could be considered over conventional clinical methods for training and competition, without jeopardizing the ecological data validity.

**Keywords:** Wearable Technology, Validation, Physical exercises, Electromyography and Neuromuscular activity

## 223 – What is the effect of different types of stretching on the muscular performance of young judo athletes

A. Bruno<sup>1</sup>, C. Maria António<sup>2</sup>

<sup>1</sup>Instituto Politécnico de Coimbra, ESTeSC – Coimbra Health School, Portugal

<sup>2</sup>CEMMPRE Universidade de Coimbra, Portugal

Email: brunorsaraujo10@gmail.com

### Introduction

Judo is a high intensity combat sport, which creates the need for the athlete to have a high level of physical activity, especially strength and flexibility. Strength is an essential component of many athletic performances, and its optimization during training or competition can be improved with the right warm-up. Inside some recommendations, as the ones from American College of Sports Medicine (ACSM), we find stretching as a part of the warm-up, once it's believed that it can improve performance and reduce injury risk.

### Objectives

In this study, we aimed to understand what is the effect of different types of stretching, Global Active Stretching (SGA), static stretch and dynamic stretch on the muscular performance of young judo athletes.

### Methodology

24 athletes volunteered to participate in the study, 17 male and 7 female with mean ages  $16,50 \pm 1,4$  years. The protocol had three intervention groups, divided in dynamic stretch, static stretch and SGA, and had one control group who didn't perform any type of stretch. Two assessments were performed before and after the intervention using two tests, the countermovement jump (to evaluate the jump height with a force platform) and the sit and reach (to evaluate the flexibility).

### Results

The results shown that the dynamic stretching had statistically significant differences ( $p=0.028$ ), improving the jump height. When it comes to force production, no other group was statistically significant. Similarly, on flexibility, only one group had statistically significant differences ( $p=0.028$ ), the static stretching group. The remaining groups did not show any statistically significant difference.

### Conclusion

Dynamic stretching is the type of stretching with the most benefits to the athlete, especially when the force production and the flexibility work together, as in judo.

**Keywords:** Stretching, Strength, Flexibility, Judo

## WORKSHOPS

## WS1 – Treino Auditivo: uma aplicação com ruído

Filipa Maia, Luís Marcelino, Vitor de Jesus, Sérgio Paulo, Margarida Serrano\*, Projeto Experiências Auditivas Melhoradas, EVOLLU/ESTeSC-IPC  
Email: [mserrano@estescoimbra.pt](mailto:mserrano@estescoimbra.pt)

### Sinopse

O workshop teve como objetivo apresentar o desenvolvimento da app "Treino Auditivo", bem como resultados de um estudo realizado com a referida app.

A dificuldade de perceber no ruído é uma das principais queixas em relação à audição. Esta queixa agrava-se com o aumento da idade em que a velocidade de processamento cognitivo diminui e/ou quando a perda de audição está presente. O treino auditivo pode melhorar a percepção da palavra nestas situações.

A app é um jogo com dez níveis em que a dificuldade de percepção da palavra vai aumentando devido ao aumento da intensidade do ruído e devido ao aumento de dificuldade de distinguir oralmente as palavras apresentadas.

Durante o jogo o indivíduo escuta uma palavra ou uma pseudopalavra e após ouvir tem que escolher entre as duas palavras/pseudopalavras que lhe são propostas pela app. As palavras apresentadas são pares mínimos que por exemplo no segundo nível diferem apenas numa vogal e no décimo nível diferem apenas numa oclusiva, ou seja, vai aumentando a dificuldade de distinguir oralmente as duas palavras. Cada nível é composto por dez palavras. O indivíduo só passa de nível se acertar sete das dez palavras. Ao passar de nível o ruído aumenta. As palavras são apresentadas de um modo aleatório ora em voz feminina ora em voz masculina.

A aplicação de treino auditivo EVOLLU, desenvolvida em colaboração com a ESTeSC, em português europeu, promove uma melhoria na percepção da palavra em ambiente ruidoso. Esta melhoria mantém-se passado algum tempo, sinal que os indivíduos aplicam a aprendizagem que realizaram durante o treino auditivo, no seu dia a dia. Pode ser utilizada por todos os indivíduos sem dificuldades cognitivas e que saibam ler e escrever, qualquer que seja a idade. É assim uma ferramenta lúdica e clínica para pessoas com dificuldades auditivas, Audiologistas, Terapeutas da Fala, entre outros.

## WS2 – Estimulação Auditiva Ritmica na Doença de Parkinson

Maria Coriolano\*, Izaura Azevedo e Ihana Gondim, Universidade Federal de Pernambuco  
Email: [gracawander@hotmail.com](mailto:gracawander@hotmail.com)

### Sinopse

As disfunções da marcha na doença de Parkinson (DP) são causadas pela deterioração da modulação dopaminérgica sobre os núcleos da base, produzindo falhas no mecanismo de auto-geração, iniciação e temporização dos movimentos. Essas falhas repercutem sobre a marcha que se apresenta arrastada, lenta, com passos curtos, assimetria no balanço dos braços e alterações posturais. Essas características promovem prejuízo da mobilidade funcional e, conseqüentemente, nas atividades e participação da pessoa.

A estimulação auditiva rítmica (EAR) aplicada à marcha consiste em caminhar junto com um som isócrono repetido (como o metrônomo) ou música com estrutura de batida saliente, fornecendo suporte temporal necessário para sincronização da marcha na DP. Desta forma, o objetivo deste workshop é apresentar os resultados da utilização de um aplicativo para smartphone com EAR embarcada na mobilidade de pessoas com DP. O aplicativo, desenvolvido pelo nosso grupo de pesquisa, Grupo Pró-Parkinson, apresenta um menu de músicas regionais e também a possibilidade de utilização do metrônomo em diversas tarefas com finalidade terapêutica.



## WS3 – Microbiota Intestinal e Saúde

Cláudia Marques, Universidade Nova de Lisboa  
Email: [claudia.sofia.marques@nms.unl.pt](mailto:claudia.sofia.marques@nms.unl.pt)

### Sinopse

O trato gastrointestinal humano é colonizado por diversos microrganismos e é no cólon que reside a comunidade mais densa e com mais diversidade: o microbiota intestinal. O microbiota intestinal, enquanto ecossistema em equilíbrio, interage com o organismo hospedeiro, desempenhando diversas funções metabólicas. Uma alteração da composição e função do microbioma intestinal (disbiose) pode estar na base de diversas doenças como as doenças inflamatórias intestinais e a obesidade. No entanto, através da alimentação que é um dos fatores com mais impacto na composição do microbiota intestinal é possível prevenir as doenças associadas à disbiose. No dia em que se celebra o dia mundial do microbioma, iremos abordar neste workshop várias estratégias para aumentar a diversidade de microrganismos no cólon e desta forma promover um intestino saudável.