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2ª Conferência nacional de fisioterapia

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FISIOTERAPIA
INSTITUTO CENTRAL - HCFMUSP

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2ª Conferência nacional de fisioterapia

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PROGRAMAÇÃO				
16/8/2019				
07:00-07:55	RECEBIMENTO DE MATERIAL			
08:00-08:30	ABERTURA SOLENE			
08:30-09:30	PALESTRA MAGNA **A arte de reinventar-se na vida e na carreira: Sobrevivência e felicidade** Eugênio Mussak			
09:30-10:15	COFFEE-BREAK + APRESENTAÇÃO PÔSTER			
10:15-11:00	ENCONTRO EX-ALUNOS			
	SALA 2	**SALA 1**	**SALA 4**	**SALA 5**
	EIXO FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI	**EIXO FISIOTERAPIA PÉLVICA E SAÚDE DA MULHER**	**EIXO DISFUNÇÕES MUSCULOESQUELÉTICAS, ESPORTE E ATIVIDADE FÍSICA**	**EIXO NEUROCIÊNCIAS E NEUROMODULAÇÃO**
11:00-12:00	**Prática baseada em evidências**	**Sessão interativa: Recursos diagnósticos inovadores: Como interpretar?**	**Revisitando os fundamentos terapêuticos**	**Neuromodulação: Trajetória no Brasil e no mundo**
11:00-11:20	MINI-CONFERÊNCIA **Evidências em fisioterapia cardiorrespiratória** Celso R F Carvalho	MINI-CONFERÊNCIA **Fluxometria e estudo urodinâmico** Marcos Giannetti Machado	MINI-CONFERÊNCIA **Inovando com recursos tradicionais** Cássio Marinho Siqueira	MINI-CONFERÊNCIA **Neuromodulação: Dos primórdios aos dias atuais** Manoel Jacobsen Teixeira
11:20-11:35	**Fisioterapia em UTI: Estado da arte** Carolina Fu	**Manometria anorretal e US 3D** Ilario Froehner Junior	**Controle neural da flexibilidade: Encurtamento ou estratégia?** Cássio Marinho Siqueira	**Regulamentação da neuromodulação no Brasil** Solange Canavarro
11:35-11:50	**Reabilitação cardiorrespiratória: Estado da arte** Carlos Augusto Marçal Camillo	**Interpretando exames: Casos clínicos** Marcos Giannetti Machado e Ilario Froehner Junior	**Valgo dinâmico: Fraqueza do glúteo médio?** Fabio Melo Bessa de Souza	**Papel do Brasil no estado da arte da neuromodulação** Katia Nunes Sá
11:50-12:00	**Discussão** Carolina Fu	**Discussão** Marcos Giannetti Machado	**Discussão** José Eduardo Pompeu	**Discussão** Manoel Jacobsen Teixeira
12:00-13:00	**Urgência e emergência**	**Inovação na avaliação do assoalho pélvico**	**Atividade física: Custo e benefício**	**Fundamentos da neuromodulação**
12:00-12:20	MINI-CONFERÊNCIA **Fisioterapia na emergência** Patrícia Albuquerque de Moura	MINI-CONFERÊNCIA **Manometria** Juliana Schulze Burti	MINI-CONFERÊNCIA **Life style medicine** João Paulo de Santanna Pinto	PALESTRA 1 **Princípios físicos, fisiológicos e fundamentos do tDCS e TMS** Kátia Monte-Silva (25') PALESTRA 2 **Fisioterapia guiada por recursos eletrofisiológicos** Érika Carvalho Rodrigues (25')
12:20-12:35	**Recepção do resgate aéreo: Experiência da Fisioterapia ICHC** Luciana Campos Reis	**Eletromiografia** Claudia Rosenblatt Hacad	**Tecnologia wearable incentivando a atividade física** Roberto Bizaco	
12:35-12:50	**Catástrofes e múltiplas vítimas: organização da equipe multitprofissional** Beatriz Perondi	**Biofeedback ultrassonográfico** Ilario Froehner Junior	**Dosimetria: Chave do treinamento** Frederico Barbosa	
12:50-13:00	**Discussão** Cássio Stipanich	**Discussão** Juliana Schulze Burti	**Discussão** João Paulo de Santanna Pinto	**Discussão** Katia Nunes Sá
13:00-14:00	**ALMOÇO + SIMPÓSIO SATÉLITE**		**ALMOÇO + SIMPÓSIO SATÉLITE**	
	EIXO FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI	**EIXO ENVELHECIMENTO**	**EIXO FISIOTERAPEUTA GESTOR**	**EIXO NEUROCIÊNCIAS E NEUROMODULAÇÃO**
14:00-15:00	**Novas perspectivas em ventilação mecânica**	**Aprendizado e estimulação cognitivo-motora no idoso**	**Inovações na gestão assistencial de serviços públicos e privados**	**Sessão interativa: Técnicas de neuromodulação não invasiva**
14:00-14:20	MINI-CONFERÊNCIA **Ventilação mecânica: Visão de futuro** Marcelo Britto Passos Amato	MINI-CONFERÊNCIA **Prevenção do declínio cognitivo motor em idosos** José Eduardo Pompeu	MINI-CONFERÊNCIA **O olhar do fisioterapeuta gestor** Daniela Kinoshita Ota	**Como fazer?** Abrahão Fontes Baptista e Kátia Monte-Silva
14:20-14:35	**Sincronia paciente-ventilador** Mayson Laércio de Araújo Souza	**Reabilitação vestibular nas disfunções de controle motor** Flavia Doná	PAINEL DE BORDO **Dimensionamento e qualidade assistencial - Case Instituto Central do Hospital das Clínicas** Priscila de Carvalho	**Oficina de TMS** Abrahão Fontes Baptista e Kátia Monte-Silva (35')
14:35-14:50	**SARA: O que há de novo?** Pedro Mendes Vitale	**Efeitos do exercício aeróbio na aprendizagem motora de indivíduos idosos** Giordano Marcio Gatinho Bonuzzi	**Impacto assistencial na gestão do desmame ventilatório de pacientes intubados - Case Hospital São Luís** Kátia Abe Yamakawa **Dimensionamento estratégico da equipe - Case Rede de Reabilitação Lucy Montoro** Denise Vianna Machado Ayres	**Oficina de tDCS** Abrahão Fontes Baptista e Kátia Monte-Silva (15')

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16/8/2019				
	SALA 2	**SALA 1**	**SALA 4**	**SALA 5**
14:50-15:00	**Discussão** Marcelo Britto Passos Amato	**Discussão** José Eduardo Pompeu	**Implantação da fisioterapia no time de resposta rápida - Case Hospital Sírio Libanês)** Cláudia Seiko Kondo	**Discussão** Abrahão Fontes Baptista Kátia Monte-Silva
15:00-16:00	**Monitorização do paciente crítico**	**Cognição**	**Sessão interativa: Liderança transformadora**	**Avaliação eletrofisiológica**
15:00-15:20	MINI-CONFERÊNCIA **Monitorização avançada do paciente crítico** Adriana Sayuri Hirota	MINI-CONFERÊNCIA **Inovação na avaliação e rastreio da insuficiência cognitiva no idoso** Gislaine Gil	**Liderança que inspira e engaja pessoas: Como direcioná-las ao futuro?** Walmir Cedotti	**Conectividade neural** Andre R O Fonseca (25') **Construção de mapas neurais** Claudia Domingues Vargas (25')
15:20-15:35	**Monitorização da hemodinâmica encefálica em UTI: Importância para a fisioterapia** Angela Salomão Macedo Salinet	**Excitabilidade cortical no envelhecimento** Lilian Andrades		
15:35-15:50	**Ultrassonografia muscular e pulmonar em UTI: Ferramenta útil?** Catherine Cely Oliveira	**Uso da neuromodulação na insuficiência cognitiva do idoso** Juliana Barbosa Goulardins		
15:50-16:00	**Discussão** Adriana Sayuri Hirota	**Discussão** Gislaine Gil	**Discussão** Carolina Mendes do Carmo Priscila de Carvalho	**Discussão** Anna Fontes Bapstista
16:00-16:45	**COFFEE-BREAK + APRESENTAÇÃO PÔSTER + SIMPÓSIO SATÉLITE**			
16:45-17:00	**APRESENTAÇÃO ORAL**			
	EIXO FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI	**EIXO ENVELHECIMENTO**	**EIXO FISIOTERAPEUTA GESTOR**	**EIXO DISFUNÇÕES MUSCULOESQUELÉTICAS, ESPORTE E ATIVIDADE FÍSICA**
17:00-18:00	**Desmame ventilatório e doença crítica crônica**	**Sessão interativa: Realidade virtual na reabilitação**	**Sessão interativa: Liderança transformadora**	**Neurociência da lesão do atleta**
17:00-17:20	MINI-CONFERÊNCIA **Novas tendências no desmame difícil** Liria Yuri Yamauchi	**Tecnologia para avaliação e tratamento dos distúrbios do controle postural em idosos** José Eduardo Pompeu	**Liderando para o futuro** **Auto percepção do seu estilo de liderança: desafios e oportunidades na prática** Walmir Cedotti	MINI-CONFERÊNCIA **O homúnculo do atleta: a representação cortical dos músculos** Artur Padão Gosling
17:20-17:35	**É possível predizer o desfecho do desmame?** Priscila Alves de Araújo			**Excitabilidade cortical do atleta pós cirúrgico** Abrahão Fontes Baptista
17:35-17:50	**Terapia nasal de alto fluxo previne intubação?** Alexandre Biasi Cavalcanti			**Inibições musculares pós lesão** Cássio Marinho Siqueira
17:50-18:00	**Discussão** Liria Yuri Yamauchi	**Discussão** José Eduardo Pompeu Gisele Cristine Vieira Gomes	**Discussão** Carolina Mendes do Carmo Priscila de Carvalho	**Discussão** Alexandre Hideki Okano

PROGRAMAÇÃO				
17/8/2019				
	SALA 2	**SALA 1**	**SALA 4**	**SALA 5**
	EIXO FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI	**EIXO FISIOTERAPIA PÉLVICA E SAÚDE DA MULHER**	**EIXO NEUROMODULAÇÃO & DISFUNÇÕES MUSCULOESQUELÉTICAS, ESPORTE E ATIVIDADE FÍSICA**	
08:00-09:00	**Músculos respiratórios em pacientes criticamente enfermos**	**Neuromodulação periférica**	**Neurociência no treinamento e desempenho humano**	
08:00-08:20	MINI-CONFERÊNCIA **Fraqueza muscular diafragmática na UTI: Evitável ou inevitável?** Caroline Gomes Mól	MINI-CONFERÊNCIA **Circuitos neurais das funções urinária e fecal** João Victor Teixeira Henriques	MINI-CONFERÊNCIA **Neurociência e neuromodulação no esporte** Alexandre Hideki Okano	
08:20-08:35	**Alterações agudas da mecânica respiratória e dispneia no DPOC** Daniel Imay Corrêa	**Neuromodulação periférica** Nilza Maria Nave Castro	**Estimulação elétrica cerebral na reabilitação esportiva: Evidências e potenciais abordagens** Fuad Ahmad Hazime	
08:35-08:50	**Treinamento muscular respiratório na UTI** Lígia dos Santos Roceto Ratti	**Papel do fisioterapeuta no pré e pós implante de neuromodulador sacral** Carina Mesquita	**Treinamento baseado em neuroengenharia** Edgard Morya	
08:50-09:00	**Discussão** Caroline Gomes Mól	**Discussão** João Victor Teixeira Henriques	**Discussão** Alexandre Hideki Okano	

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PROGRAMAÇÃO				
17/8/2019				
	SALA 2	SALA 1	SALA 4	SALA 5
			EIXO NEUROMODULAÇÃO & ENVELHECIMENTO	
09:00-10:00	**Funcionalidade e internação hospitalar**	**Disfunções do assoalho pélvico e funcionalidade**	**Neuromodulação na dor crônica**	
09:00-09:20	MINI-CONFERÊNCIA **Sobreviver a UTI, e então?** Ricardo Kenji Nawa	MINI-CONFERÊNCIA **Reabilitação pélvica: Foco na funcionalidade** Rita Pavione Rodrigues Pereira	MINI-CONFERÊNCIA **Neuromodulação na dor crônica** Abrahão Fontes Baptista	
09:20-09:35	**Reabilitação funcional na internação: O papel da estimulação elétrica periférica** Vinicius Maldaner	**Atividade física e disfunções do assoalho pélvico** Liris Wuo	**Neumodulação na dor musculoesquelética** Ana Mércia Barbosa Leite Fernandes	
09:35-09:50	**Reabilitação funcional pós alta: Desfechos a longo prazo** Márcia Midori Morimoto	**Pilates na reabilitação pélvica: Mitos e verdades** Thais Lucia Pinheiros	**Neuromodulação na dor em pacientes neurologicos** Maíra Carolina Lixandrão	
09:50-10:00	**Discussão** Ricardo Kenji Nawa	**Discussão** Rita Pavione Rodrigues Pereira	**Discussão** Abrahão Fontes Baptista	
10:00-10:45	**COFFEE-BREAK + APRESENTAÇÃO PÔSTER**			
	EIXO FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI	**EIXO FISIOTERAPIA PÉLVICA E SAÚDE DA MULHER**	**EIXO DISFUNÇÕES MUSCULOESQUELÉTICAS, ESPORTE E ATIVIDADE FÍSICA**	**EIXO ENVELHECIMENTO**
10:45-11:45	**Reabilitação pulmonar: novas perspectivas na assistência ambulatorial**	**Sessão interativa: Linguagem universal na reabilitação**	**Desempenho humano x tecnologia**	**Sessão interativa: Prevenção de quedas**
10:45-11:05	MINI-CONFERÊNCIA **Reabilitação pulmonar: Novas perspectivas na assistência ambulatorial** Celso R F Carvalho	PALESTRA INTERATIVA **Tecnologia 3D** Chao Lung Wen	MINI-CONFERÊNCIA **Evolução do desempenho humano e tecnologia** Augusto Carvalho Barbosa	PALESTRA INTERATIVA **Bate papo - Intervenções multifatoriais e multidisciplinares na prevenção de quedas** Deise Ferreira da Silva e Adson da Silva Passos
11:05-11:20	**Treinamento aeróbico contínuo e intervalado para DPOC: Realidade e perspectivas** Rafaella Fagundes Xavier	**Homem virtual** Suehellen Anne Rocha Milhomem	**Futebol profissional: Controle de cargas internas e externas** Guilherme Dalcin Dilda	
11:20-11:35	**Treinamento muscular respiratório na DPOC: Indicação e evidências** Yves de Souza	**Biofeedback EMG funcional** Claudia Rosenblatt Hacad	**Novas tecnologias para avaliação e monitoramento de atletas de endurance** Gerson dos Santos Leite	
11:35-11:45	**Discussão** Celso R F Carvalho	**Discussão** Chao Lung Wen	**Discussão** Gerson dos Santos Leite	**Discussão** Deise Ferreira da Silva Adson da Silva Passos
11:45-12:45	**Vencendo barreiras nos cuidados paliativos**	**Tecnologia digital na reabilitação do assoalho pélvico**	**Recuperação pós treino**	**Neuromodulação em pediatria**
11:45-12:05	MINI-CONFERÊNCIA **Cuidados paliativos intra-hospitalar: Desmistificando tabus** Rogério Adriano Abe	MINI-CONFERÊNCIA **Mídias sociais como veículo de informação** Luisa Amalfi	MINI-CONFERÊNCIA **Descanso também é treino - tecnologias para recuperação muscular** Isabela C R Rossi Portes	MINI-CONFERÊNCIA **Neuromodulação e transtornos do neurodesenvolvimento** Mauro Muszkat
12:05-12:20	**Atenção domiciliar remota** Vinicius Pafume de Oliveira	**Gameterapia** Joceara Neves dos Reis	**Uso da fotobiomodulacao para o desempenho e recuperação muscular** Cleber Ferraresi	**Neuromodulação em crianças com paralisia cerebral** Luanda André Collange
12:20-12:35	**Suporte ventilatório no fim de vida: Fazer ou não fazer?** Juliana Nalin de Souza Passarini	**Aplicativos e dispositivos digitais** Fátima Faní Fitz	**Bate-papo com especialistas** Isabela C R Rossi Portes	**ETCC e controle postural em crianças** Renata Hydee Hasue
12:35-12:45	**Discussão** Rogério Adriano Abe	**Discussão** Luisa Amalfi	**Discussão** Isabela C R Rossi Portes	**Discussão** Mauro Muszkat
12:45-13:00	**APRESENTAÇÃO ORAL**		**APRESENTAÇÃO ORAL**	
13:00-14:00	**ALMOÇO + SIMPÓSIO SATÉLITE**		**ALMOÇO + SIMPÓSIO SATÉLITE**	
	EIXO FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI	**EIXO FISIOTERAPIA PÉLVICA E SAÚDE DA MULHER**	**EIXO DISFUNÇÕES MUSCULOESQUELÉTICAS, ESPORTE E ATIVIDADE FÍSICA**	**EIXO NEUROCIÊNCIAS E NEUROMODULAÇÃO**
14:00-15:00	**Sessão interativa: Simulação realística: Como inovar para solucionar casos em terapia intensiva?**	**Atualidades em disfunções sexuais**	**Sessão interativa: Avaliação funcional dinâmica (AFD)**	**Neuromodulação nas doenças neurológicas**

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PROGRAMAÇÃO				
17/8/2019				
	SALA 2	SALA 1	SALA 4	SALA 5
14:00-14:20	**Apresentação da proposta e divisão dos grupos** Caroline Gomes Mól	MINI-CONFERÊNCIA **Disfunções sexuais: Fisioterapia baseada em evidências** Mariane Castiglione	PALESTRA INTERATIVA **AFD** Marcela Rocha de Carvalho	MINI-CONFERÊNCIA **Evidência da neuromodulação nas doenças neurológicas cerebrovasculares** Kátia Monte-Silva
14:20-14:35	**Realidade virtual na reabilitação funcional do paciente crítico** José Eduardo Pompeu	**Papel da equipe interdisciplinar Helga Elisa Marquesini** Gonzales Monaco	**Atividade Interativa 1**	**Evidências da neuromodulação nas doenças neurodegenerativas** Adriana Baltar do Rêgo Maciel
14:35-14:50		**Laserterapia na dor genito-pélvica** Claudia Pignatti Frederice Teixeira		**Questionário de disfunção sensório-motora (QDSM): Uma ferramenta para guiar o tratamento com neuromodulação** Deborah Marques de Oliveira
14:50-15:00	**Interrupção do suporte ventilatório: Terapia nasal de alto fluxo e novos índices preditivos** Matheus Pereira Bateloche Cássio Stipanich	**Discussão** Mariane Castiglione	**Discussão** Cássio Marinho Siqueira Jéssica Fernandes de Almeida Lima	**Discussão** Kátia Monte-Silva
15:00-16:00	-	**Novas perspectivas em oncologia pélvica**	-	**Neuromodulação: Tendências clínicas futura**
15:00-15:20	**Ultrassom** Caroline Gomes Mól Renato Batista dos Reis	MINI-CONFERÊNCIA **Atuação da fisioterapia na oncologia pélvica** Marcela Ponzio Pinto Silva	**Atividade Interativa 2** Marcela Rocha de Carvalho	MINI-CONFERÊNCIA **TMS de alvos profundos: Novas perspectivas terapêuticas** Daniel Ciampi Araujo de Andrade
15:20-15:35		**Fotobiomodulação na oncologia pélvica: Da evidência à prática clínica** Juliana Lenzi		**Neuromodulação na apnéia do sono** Cesar Augusto Melo e Silva
15:35-15:50		**Autovestimentas e enfaixamento compressivo** Jaqueline Munaretto Timm Baiocchi		**Neuromodulação nas síndromes metabólicas** Alexandre Hideki Okano
15:50-16:00	**Discussão** Caroline Gomes Mól	**Discussão** Marcela Ponzio Pinto e Silva	**Discussão** Cássio Marinho Siqueira Jéssica Fernandes de Almeida Lima	**Neuromodulação com fotobiomodulação transcraniana** Nivaldo Antonio Parizotto
16:00-16:45	COFFEE-BREAK + RETIRA DE PÔSTER E AVALIAÇÃO INTERNA DOS MELHORES TRABALHOS + SIMPÓSIO SATÉLITE			
	EIXO FISIOTERAPEUTA GESTOR	EIXO FISIOTERAPIA PÉLVICA E SAÚDE DA MULHER	EIXO DISFUNÇÕES MUSCULOESQUELÉTICAS, ESPORTE E ATIVIDADE FÍSICA	EIXO NEUROCIÊNCIAS E NEUROMODULAÇÃO
16:45-17:45	**O uso das tecnologias na gestão dos serviços de fisioterapia**	**Fisioterapia em obstetrícia: O que há de novo?**	-	**Neuromodulação: Perspectivas da prática clínica**
16:45-17:05	**Big Data nosso aliado na assistência e na gestão de serviços de fisioterapia** Jacson Venancio de Barros (25')	MINI-CONFERÊNCIA **Fisioterapia obstétrica baseada em evidências** Leila Maria Alvares Barbosa	**Atividade Interativa 3** Marcela Rocha de Carvalho	MINI-CONFERÊNCIA **Pensando no futuro da neuromodulação na fisioterapia** Katia Monte-Silva
17:05-17:20		**O fisioterapeuta no pré parto e centro obstétrico** Claudia de Oliveira		**Neurmodulação no SUS: Experiência prática** Francielly Ferreira Santos
17:20-17:35	**Tendências da área de tecnologia na gestão de serviços de fisioterapia** Guilherme Machado Rabello (25')	**Recursos inovadores no pós parto imediato** Andrea Scarlato		**Remuneração em neuromodulação: TMS e tDCS** Demósthenes Santana Silva Junior
17:35-17:45	**Discussão** Katia Regina da Silva	**Discussão** Leila Maria Alvares Barbosa	**Discussão** Cássio Marinho Siqueira Jéssica Fernandes de Almeida Lima	**Discussão** Clarice Tanaka
17:45-18:00	SORTEIOS BRINDES + PREMIAÇÃO MELHORES TRABALHOS			
18:00-18:30	EVENTO SOCIAL + ENCERRAMENTO			
**Programação sujeita a modificações até o dia do evento.				

FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI

Effects of two different equipments of respiratory muscle training in individuals with COPD

Kelly Cristina da Silva Oliveira[1]; Melissa Breda[2]; Alexandre Ricardo Pepe Ambrozin[3]

[1]Professor of the Physical Therapy Course at Anhanguera Rio Claro College. Rio Claro-SP, Brazil; [2]Physiotherapist. Rio Claro-SP, Brazil; [3]Professor of the Physical Therapy Course at Unesp Marília, Marília-SP, Brazil

Objective: The objective of this study was to evaluate the effects on respiratory muscle strength, cardiorespiratory functional capacity and quality of life of patients with COPD submitted to two different TMR equipments. **Methods:** after approval by CEP (nº 2.894.657) of the IB of Unesp Rio Claro, and signing of the TCLE by the participants, seventeen patients were evaluated by means of spirometry to confirm obstruction and staging of the disease. They were submitted to the evaluation of manovacuometry to verify respiratory muscle strength, six-minute walk test (6MWT) to obtain cardiorespiratory functional capacity and answered the questionnaire of Saint George Hospital in Respiratory Disease (SGRQ) to evaluate the quality of life. Patients were divided into two groups for TMR for four weeks, one with Threshold® IMT (GIMT) and another with POWERbreathe® Classic (GP). **Results**: There was a significant increase in respiratory muscle strength, with a maximal inspiratory pressure increase of -62 ± 16.03 to -75.55 ± 22.84 cm H_2O in the GIMT, and -56 ± 22.01 to -71.25 ± 27.67 cmH_2O in GP. In the 6MWT, there was a clinical increase of the distance covered in GIMT, from 404.22 ± 139.58 m to 437.77 ± 137.30 m, and in the GP from 408.75 m (360.75 - 514.00) to 439,50 m (406.50 - 540.00). Regarding SGRQ, there was an improvement in activity (66.40 ± 23.85 to 55.94 ± 22.51% in the GIMT; and 68.72 ± 23.41 to 59.62 ± 24.86% in the GP), impact (43.30 ± 27.93 for 30.30 ± 21.11% in the GIMT and 49.16 ± 21.76 for 36.68 ± 22.39 in the GP) and in the total score (50.85 ± 25, 28 to 41.54 ± 20.96% in the GIMT and 55.23 ± 18.85 to 44.94 ± 19.53% in the GP). A statistically significant difference was considered when p<0.05. For the intergroup results, there was no statistically significant difference for respiratory muscle strength, distance walked on the 6MWT and quality of life. **Conclusion:** It was possible to conclude that both equipaments bring positive and similar outcomes in patients with COPD, showing no superiority of one over another. **Keywords:** Chronic obstructive pulmonary disease; muscle weakness; human physical conditioning; quality of life; Physiotherapy; respiratory exercises.

FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI

Reporting experiences and describing physiotherapy attendance profiles at the medical center of a tertiary hospital

Luciana Campos Reis[1]; Amanda Coelho Fernandes[2]; Clarice Tanaka[3]

[1]Fisioterapeuta da Divisão de Fisioterapia do ICHC-FMUSP, São Paulo, SP, Brasil; [2]Fisioterapeuta Gestora das Unidades de Urgência e Emergência, Gestora de Recursos Humanos e Gestora dos Programas de Residência Multiprofissional da Divisão de Fisioterapia do ICHC-FMUSP, São Paulo, SP, Brasil; [3]Professora Titular do Departamento de Fisioterapia, Fonoaudiologia e Terapia Ocupacional e Diretora da Divisão de Fisioterapia do ICHC-FMUSP, São Paulo, SP, Brasil

Objective: This survey aims to report the experience of a resident physiotherapist in the insertion of the physiotherapy attendance in the medical of the greatest state hospital of Latin America, as well as describe the demand and profile of attendances realized by the professional, in the period from March to June 2018. **Methods**: It is an observational study with descriptive analysis, an "experience report", by a resident physiotherapist in the second year of course, through the Programa Multiprofissional em Urgência e Trauma (Multiprofessional Program in Urgence and Trauma). Data referring to the physiotherapy attendances were obtained through Excel spreadsheets, and electronic health records (MV System) compiled, tabulated on Google Drive, analyzed quantitatively and percentually as of the distribution of diagnostic hypotheses. **Results:** the main obstacles experienced at the start were the adaptation to the team and the setting of criteria to discriminate those patients who would get physiotherapeutic attendance. During the survey around 911 patients were admitted into the medical center (from 7AM to 7 PM, working day time); from those, about 56% needed physiotherapeutic attendance, according to the criteria adopted. **Conclusion:** The emergency physiotherapist is a professional prepared to deal with unexpected situations, has a theoretical and practical knowledge that enables her in the identification and conduction in cases of physiological alteration, mainly those of respiratory system. However, the performance of a physiotherapist in urgency and emergency situations is a science in progress, which needs concrete evidences to set its impact and attributions. **Keywords:** physiotherapy, emergencies, urgency care, hospital physiotherapy attendance, emergency medical services, patient assistance team.

FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI

Prevalence of obstructive ventilatory disorder through slow vital capacity compared with forced vital capacity

Pedro Victor Tonicante da Silva[1]; Debora Didone Senedez[1]; Beatriz Broto Silva[1]; Joelen Silva Alves[1]; Flávio Danilo Mungo Pissulin[2]

[1]Universidade do Oeste Paulista (UNOESTE). Faculdade de Fisioterapia. Presidente Prudente/SP – Brasil; [2]Universidade do Oeste Paulista (UNOESTE). Faculdade de Fisioterapia e de Medicina. Presidente Prudente/SP – Brasil

Objective: to evaluate the incidence of obstructive ventilatory disorder (OVD), in the slow vital capacity maneuver (SVC), in individuals with spirometric diagnosis of non-specific ventilatory disorder (NVD) observed by the forced vital capacity curve (FCV). **Method:** a cross-sectional study that included individuals with spirometric diagnosis of NVD, as verified by the FCV curve. To measure DVI, it was necessary to reduce the FCV, associated with normality in FEV_1/ FCV and $FEF_{25-75\%}$/ FVC ratios. The SVC curve was then performed. In order to assess the diagnosis of OVD, by the evaluation of the SVC curve, it was required a reduction in the relationship between FEV1/FCV. A descriptive data

analysis was performed. **Results:** 40 individuals were evaluated and 25 of them were diagnosed as having DVI. Among them, 11 were male. The mean age and BMI were 46.60 ± 20.07 years-old and 26.10 ± 5.17 kg/m², respectively. After being submitted to the SVC curve execution, which allowed the verification of the FEV1/SVC and $FEF_{25-75\%}$/SVC relationships, it was possible to observe that 48% had a reduction in the relationships mentioned. Therefore, a spirometric diagnosis of OVD was performed for them. **Conclusion:** The SVC maneuver, used in addition to the FCV maneuver, was important to diagnose obstructive disorders in individuals who presented NVD with the use of the FCV maneuver. **Keywords:** spirometry, lung, pneumopathies, pulmonary atelectasis, vital capacity, airway obstruction.

FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI

Evaluation of the acute effects of adjusting the ventilation cycling by pressure support

Debora Didone Senedez[1]; Pedro Victor Tonicante da Silva[1]; Allana Helen de Souza Costa[1]; Giovana Fernandes dos Santos[1]; Flávio Danilo Mungo Pissulin[2]

[1]Universidade do Oeste Paulista (Unoeste). Departamento de Fisioterapia. Presidente Prudente/SP – Brasil; [2]Universidade do Oeste Paulista (Unoeste). Departamento de Medicina. Presidente Prudente/SP – Brasil

Objective: to verify the acute effects of cycling adjustment in 25% and 15% of peak inspiratory flow. **Method:** the study was transversal and included patients invasively ventilated with support pressure (PSV). In group 1 (G1), PSV was graduated in 15 cmH_2O, with final positive expiratory pressure (PEEP) of 5 cmH_2O, and an expiratory sensibility (E_{sens}) of 25%. Group 2 (G2) was ventilated with the same PSV and PEEP, but with E_{sens} of 15%. **Results:** We included 18 patients, 10 males, mean age of 52.9 ± 16.5 years and IMC of 28.3 ± 4.9 kg/m2. Respiratory diseases account for 56% of patients, and neurological and postoperative origins account for 33% and 11% of patients, respectively. Respiratory rate (RR), expiratory tidal volume and Tobin index (FR / VC) were similar in the two cyclings evaluated: 21.4 ± 11.2 x 23.2 ± 13.9, 520.3 ± 126.6 x 516, 6 ± 115.8, referring to 41.15 and 45.49 of the Tobin index, which relates to 15% and 25% of the cycling, respectively. Saturation and pulse (SpO_2), inspiratory time (IT), expiratory time (ET), inspiratory tidal volume and minute volume (MV) between groups G1 and G2. The same behaviour was found in heart rate (HR) and systolic and diastolic blood pressures (SBP and DBP). **Conclusion**: Cyclic variation between 25% and 15% of peak inspiratory flow did not influence the parameters evaluated. Cycle adjustment was dependent on patient response. For optimal adjustment, the patient's respiratory comfort and its synchrony with the ventilator have to be observed. **Keywords**: Mechanical ventilation, Physiological monitoring, Intensive care units, Respiratory rate, Pneumonia, Acute lung injury.

FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI

Analysis of extubation failure in patients submitted to preventive noninvasive ventilation

Beatriz Santana Lobo[1]; Larissa Padrão Isensee[2]; Leda Tomiko Yamada da Silveira[3]; Carolina Fu[3]

[1]Escola de Educação Permanente do Hospital das Clínicas da Faculdade de Medicina da Universidade de São Paulo - São Paulo (SP), Brasil; [2]Divisão de Fisioterapia do Instituto Central do Hospital das Clínicas da Faculdade de Medicina da Universidade de São Paulo - São Paulo (SP), Brasil; [3]Departamento de Fisioterapia, Fonoaudiologia e Terapia Ocupacional da Faculdade de Medicina, Universidade de São Paulo - São Paulo (SP), Brasil

Objective: Determine the rate of extubation failure in patients that underwent preventive noninvasive ventilation and patients who did not. **Methods**: This was a longitudinal observational pilot study, performed at the Central Institute of the Clinics Hospital of São Paulo's University, during July and August 2018. Data were collected on RedCap software for further analysis. It included patients intubated in the ICU for 24 hours and excluded patients who had unplanned extubation, tracheostomy, were transferred to another institute and who died. **Results**: Fifty patients were evaluated, 23 were included in the study, 11 patients in group 1, who underwent NIV after extubation, and 12 patients in group 2 (conventional extubation). The extubation failure rate was 9.09% in group 1 while in group 2, 58.30% of patients were reintubated (p=0.027). **Conclusion**: Noninvasive ventilation applied continuously immediately after extubation can significantly reduce the rate of extubation failure. Hypercapnic patients may benefit more from this practice, applied preventively. Our study found no difference as of time of mechanical ventilation, length of hospital stay and outcome of hospitalization. **Keywords:** Non Invasive Ventilation; Airway Extubation; Artificial Respiration, Intratracheal Intubation, Respiratory Insufficiency, Hypercapnia.

FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI

Augmented Reality Applied in Respiratory Physiotherapy for Pressure Peak Control

Myllena Lemes Scardino Vieira[1]; Tamires Mota Toni[1]; Matheus Viana da Silva[1]; Robson Augusto Siscoutto[1]; Ana Paula Coelho Figueira Freire[1]; Francis Lopes Pacagnelli[1]

[1]Universidade do Oeste Paulista, Presidente Prudente, SP, Brasil

Objective: To present and evaluate the usability by physiotherapists of a tool in augmented reality, for the application of respiratory exercises in hypertensive patients. **Methods:** This study was approved by the Ethics Committee (4327). The tool was developed by specialists in the field of computation and named PhysioAR. This tool uses augmented reality for the treatment of hypertensive patients, making use of three-dimensional virtual environments and electronic components for the measurement of vital signs, allowing the creation and application of

respiratory physiotherapy sessions. To test the usability, five teachers from a Physiotherapy Faculty were selected. At first, an overview was given on the application and presentation of concepts such as Virtual Reality and Augmented Reality, presenting the objectives of the system and how it functions in connection with devices for measuring vital signs. For the test, a computer containing the PhysioAR application was available. After the presentation of all the functions, each participant made use of the system for approximately five minutes, more specifically, registering a session of respiratory physiotherapy with different respiratory exercises and performing it. As the participants had just used the system, they were asked to answer a questionnaire of 12 questions and to evaluate each one with a score of five levels of satisfaction, thus being able to assign a performance of 1 to 5 for each question (I totally disagree, disagree, undecided, agree and totally agree). After collecting the answers from all the participants, the results were analyzed: the note of each question was summed, and the sum was divided by the number of participants, resulting in the average evaluation of each question. **Results:** Tool users agreed that it was an enjoyable experience, and that it is quite applicable in physiotherapy clinics. **Conclusion:** This study presented the PhysioAR tool as an applicable, innovative form of augmented reality as part of a respiratory physiotherapy session for peak pressure control in hypertensive patients. **Keywords:** hypertension, physical therapy specialty, respiration, vital signs, virtual reality, breathing exercises.

FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI

Analysis of variability of heart rate of cardiopathic patients in cardiovascular rehabilitation with virtual reality: case study

Tamires Mota Toni[1]; Myllena Lemes Scardino Vieira[1]; Beatriz Rigonato dos Santos[1]; Camilla Silva Berbert[1]; Ana Clara Campagnolo Golçalves Toledo[1]; Francis Lopes Pacagnelli[1]

[1]Universidade do Oeste Paulista, Presidente Prudente, SP, Brasil

Objective: To evaluate the autonomous nervous system through the analysis of the heart rate of cardiopathy patients submitted to virtual reality (VR). **Methods:** This study was approved by the Ethics Committee (CAAE: 80843017.2.0000.5515). Three cardiopaths of both genders were submitted to two sessions of therapy, the conventional one and the same with the VR use. For the conventional training, the cardiovascular parameters were initially verified; active stretching, warm-up and physical conditioning were performed on the ergometric bicycle with 60% of the reserve heart rate for 50 minutes. For VR training the same procedure was taken, but the warm up and conditioning phases were performed using the virtual reality glasses VR Box and the VR Traffic Bike Racer game. The variability of heart rate was assessed through the frequency indexes (HF- High Frequency identifying the parasympathetic autonomous nervous system and LF- Low Frequency identifying the sympathetic nervous system), which were taken at rest and during the physical conditioning and the percentage of variation (final value - initial value / initial value x 100) was calculated. **Results:** Patient A was a male, 72 years old, with coronary insufficiency; patient B was a female, 54 years old, with valvulopathy; and patient C was male, 56 years old, with Chagas cardiomyopathy. There was an increase in the LF (un) index in both types of training with greater repercussion in virtual reality (CT = 10.65% and VR = 43.35%). The HF (un) index decreased in both training with greater repercussion in VR (CT = -13.52% and RV = -48.51%). **Conclusion:** There are more modifications of the autonomous nervous system in virtual reality when compared to conventional rehabilitation. More patients are needed to highlight the results found. **Keywords:** heart rate, virtual reality, autonomic nervous system, cardiac rehabilitation, sympaphetic nervous system, parasympathetic nervous system.

FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI

Is there an equivalence between Londrina's activity of daily life protocol and other functional tests?

Letícia Leal[1]; Danielle Gonçalves[1]; Myllena Cutis[1]; Paulo Victor Mazeika[1]; Welerson Mendonça[1]; Yves de Souza[1]

[1]Physiotherapy, Veiga de Almeida University, Cabo Frio / RJ - Brazil

Objective: The aim of this trial was to correlate the Londrina activity of daily life protocol (Londrina-ADL) with the values of the timed up and go test (TUG), 6-minute step test (6MST), and sit-up chair test in individuals with COPD. **Method:** For this observational cross-sectional study, nine patients with COPD were recruited according to the GOLD criteria (FVC / FEV1 <70), 4 males and 5 females, mean age 61 ± 7 years, mean FEV1 = 42% predicted value, with no history of acute exacerbation in the last 3 months, in regular use of their medications. All were submitted to performance evaluation of daily life activities using the Londrina-ADL protocol, TUG to evaluate the risk of falls, 6MST to evaluate the exercise capacity, and sit-up chair test as an indirect parameter of the individual's aerobic capacity. All values were recorded and the correlations performed were Londrina-ADL vs. TUG, Londrina-ADL vs. TC6M, Londrina-ADL vs. sit-up chair. The data are presented through the Pearson r value and p value, considered statistically significant when $p<0.05$. **Results:** The mean time of the Londrina-ADL was 300 ± 117 seconds, TUG = 9±2 seconds, 6MST= 215±93 steps and sit-up chair = 10±3. The correlation values found were: Londrina-ADL vs. TUG ($r = 0.507$, $p = 0.046$), Londrina-ADL vs. 6MST ($r = -0.527$, $p = 0.145$), Londrina-ADL vs. sit-up chair ($r = -0.414$, $p = 0.261$). **Conclusion:** There is a tendency to moderate correlation between the Londrina-ADL protocol and TUG, which is not found when correlated with 6MST and sit-up chair. Because of the small number of individuals in the survey, we have failed to demonstrate the mechanism for this correlation. The similarity is that both Londrina-ADL and TUG evaluate the performance time of a task, which may be a possible justification for this result. **Keywords:** Activities of daily living, exercise, COPD, rehabilitation, muscle strength and postural balance.

FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI

Comparison of the performance of healthy individuals during level, rise and downhill walking

Joanna Azevedo[1]; Rayana Nascimento[1]; Filipe Reis[1]; Beatriz Lombard[1]i; Nivea Araújo[1]; Yves de Souza[1]

[1]Physiotherapy, Veiga de Almeida University, Cabo Frio / RJ - Brazil

Objective: To compare the performance of healthy individuals in level, rise and downhill walking in hemodynamic, lower limb pain and fatigue domains. **Method:** For this observational cross-sectional study, eleven young and healthy individuals with mean age 24±5 years were evaluated, without diagnosis of chronic diseases, non-smokers and without osteomioarticular impairment to gait or postural control. All were submitted to three treadmill walks, with a speed of 5 km/h for 5 minutes, being one level walk, one walk with 10% positive incline (rise walking) and one walk with 10% negative incline (downhill walking). During walking the heart rate (HR) was measured every 30 seconds, and the values of fatigue (BORG) and pain (EVA) were measured every 1 minute. The order of the walks was random, and a minimum rest time of 5 minutes between them was mandatory. **Results:** When comparing the three walking models, we found that the rise walking presented the highest mean value of HR during walking (126±36) while the level walking presented a lower value as expected (104±19), and downhill walking had the lowest mean HR during exercise (98±11), which was the only one that presented statistical significance with p = 0.0021. In the comparison of fatigue and pain, only the rise walking was superior in these two domains, while level and downhill walking presented equivalent means. **Conclusion:** In the study population we found values of pain and fatigue equivalent to the exercise of level walking and downhill walking. In HR, the downhill was shown to be the one that least generates cardiovascular effort for the individual. This study is being continued with the aim of increasing the number of participants. In all cases and domains, rise walking came to be more tiring and to generate higher index of pain and HR. **Keywords**: Walking, activities of daily living, exercise, fatigue, heart rate and aerobic exercise.

FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI

Lung aeration and diaphragmatic function: prospective observational study

Isabela Camargo Damiati[1]; Catherine Cely Oliveira[1]; Renato Batista dos Reis[1]; Monize Karla Alves Aquino[1]; Caroline Gomes Mol[2]; Clarice Tanaka[3]

[1]Fisioterapeuta da Divisão de Fisioterapia do ICHC-FMUSP, São Paulo, SP, Brasil; [2]Fisioterapeuta Gestora das Unidades de Terapia Intensiva e Gestora Financeira da Divisão de Fisioterapia do ICHC-FMUSP, São Paulo, SP, Brasil; [3]Professora Titular do Departamento de Fisioterapia, Fonoaudiologia e Terapia Ocupacional e Diretora da Divisão de Fisioterapia do ICHC-FMUSP, São Paulo, SP, Brasil

Objective: To investigate the relationship between inspiratory muscle strength and lung and diaphragmatic ultrasound evaluation in critically ill patients breathing spontaneously in the ICU. **Methods:** This is a prospective observational study. Maximal inspiratory pressure (MIP) was assessed using a manovacuometer. Diaphragm excursion (DE) and lung aeration were evaluated using ultrasound equipment. The lung ultrasound score (LUS) was used to assess lung aeration and additionally, a partial score was obtained from dependent lung regions (LUS-dependent). **Results:** 24 patients were included. A strong and significant correlation (p≤0.001) was observed between DE during deep breathing and LUS (r=-0.651) and LUS-dependent (r=-0.772). A weak, but significant correlation was found between MIP and LUS (r=-0.442, p=0.031) and LUS-dependent (r=-0.441, p=0.041). **Conclusion:** The diaphragmatic dysfunction contributes to the loss of lung aeration, especially in lung dependent regions, of the critically ill patients breathing spontaneously. **Keywords:** Diaphragm. Diaphragmatic excursion. Diaphragmatic dysfunction. Maximum inspiratory pressure. Pulmonary ultrasound.

FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI

Production of an instructive material to facilitate the management of asthma symptoms and exacerbation in children

Fernanda Miller[1]; Carly Penna[1]; Mayke Machado[1]; Alessandra Linhares[1]; Pamela Pereira[1]; Yves de Souza[1]

[1]Physiotherapy, Veiga de Almeida University, Cabo Frio/RJ Brazil

Objective: To review in the scientific literature the main physiotherapeutic techniques that can be taught to asthmatic patients and produce an instructive material to improve the control of the symptoms of the disease. **Method:** Scientific articles were researched in the databases PubMed, Medline, SciElo and Lilacs using as search terms: *asma, técnica de controle respiratório, exercícios respiratórios, criança, exacerbação* (in Portuguese); and *asthma*, *breathing Control Techniques*, *Respiratory Exercise*, *Child*, *Acute exacerbation* (in English). The articles accepted were the narrative review, systematic review, case studies, clinical trials and opinion articles or editorials, with a temporal cut between 2008 and 2019. The information found was discussed among the authors of the study, and a printed material was assembled, containing instructions for respiratory techniques and general care that, according to the researched literature, present minimal risk or minimal-and-controlled, and benefits in the control of asthma exacerbation in children. **Result:** A printed material was elaborated, measuring 9.8 cm wide by 42 cm in height, using duplex with coloured print and folded as a small booklet, which closed measures 9.8 cm wide by 10.5 cm of height containing 12 pages, where the main instructions are: basketball activity at home and blowing a party whistle (without symptom of dyspnea); making soap bubbles with controlled blowing (in case of dyspnea), using the latter as respiratory control technique, simulating playfully the form of the labial frenum. **Conclusion:** The material produced by this review is being distributed free of charge in the basic health units of the public network of the municipality of Cabo Frio/RJ. It has had good acceptability of pediatricians and is facilitating the access of asthmatic children and their legal guardians to techniques that can facilitate the symptomatological management of the disease. **Keywords**: Asthma, breathing exercises, pediatrics, orientation, activities of daily living and review.

FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI

Daily activities of children that can be reproduced in a protocol of evaluation of activities of daily living: literature review

Carly Penna[1]; Mayke Machado[1]; Fernanda Miller[1]; Rayana Nascimento[1]; Pamela Pereira[1] e Yves de Souza[1]
[1]Physiotherapy, Veiga de Almeida University, Cabo Frio/RJ Brazil

Objective: To review in the scientific literature the main activities of daily living (ADL) of children between 5 and 10 years old, which can be reproduced for the elaboration of a quantitative evaluation test of ADL. **Method:** Scientific articles were researched in the databases PubMed, Medline, SciElo and Lilacs using as search terms: *atividades de vida diária, criança, habilidades funcionais, rotinas de autocuidado, atividades divertidas e infantil* (in Portuguese) and *activities of daily life*, *child*, *functional Skills*, *self-care routines*, *fun activities* and *childhood* (in English). The articles accepted were the narrative review, systematic review, case studies, clinical trials and opinion articles or editorials, with a temporal cut between 2008 and 2019. The information found was classified as ADL and subdivided into: pranks, self-care and mobility. The activities were presented within the three defined classifications and a proposed protocol of the set of these activities was also elaborated. **Results:** Among the most cited in the literature we find as pranks: running, jumping, hopscotch and bike riding. As self-care: feeding oneself, dressing up and bathing independently. As mobility: picking up and putting the toys away, sitting down and standing up, and walking with a goal. A proposed protocol could comprise the following activities, in the following order: sitting down and standing up; walking to a certain point with a ball in the hands (approximately 5m); dressing up and taking off a shirt; removing and storing toys in a box; and Hopscotch. **Conclusion:** Using the activities found in this review, it was possible to develop a protocol proposal. This study continues conducted to find hemodynamic and aerobic responses to the proposed protocol presented. **Keywords**: Exercise test, breathing exercises, pediatrics, orientation, activities of daily living and review.

FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI

Comparison of the performance of patients with COPD during walking in the plane, uphill and downhill

Alan Andrade[1]; Shara Reis[1]; Joanna Azevedo[1]; Rayana Nascimento[1]; Filipe Reis[1]; Yves de Souza[1]
[1]Physiotherapy, Universidade Veiga de Almeida, Cabo Frio/RJ - Brazil

Goals: To compare the performance of patients with COPD in walking, and downhill exercise in the domains hemodynamic, lower limb pain (LLL) and fatigue. **Method:** For this observational cross-sectional study, nine patients diagnosed with COPD were recruited according to the GOLD criteria (FVC/FEV1<70), 4 males and 5 females, mean age 61±7 years, mean FEV1=42% of the predicted value, with no history of exacerbation in the last 3 months, in regular use of their medications. All were submitted to three treadmill tracks, with a speed of 5 km/h for 5 minutes, being a walk in the plane, a walk uphill (10% slope) and a walk downhill (10% slope). While walking the heart rate (HR) and peripheral oxygen saturation (SpO_2%) was measured every 30 seconds, and the fatigue values (BORG) were measured every 1 minute. The order of the walks was random, and a minimum rest time of 5 minutes between them was mandatory. **Results:** When comparing the three models of walking, we found that walking uphill had the highest mean value of HR at the end of the walk (136±29), while walking on the plane presented a lower value as expected (118±17), and downhill showed the lowest mean HR value during exercise (111±19), which was the only one that presented statistical significance at p=0.0032. In SpO_2%, the downhill hike was the one that maintained the lowest levels of oxygenation, and walking on the plane the one that maintained the highest, but did not present statistical significance (p=0.0957). **Conclusion:** In the population of this study the HR of the downhill walk was shown to be the one that generated the least cardiovascular effort for the individual, but the one that generated the highest fall values of SpO_2%. This study is being continued with the aim of increasing the number of patients participating. **Keywords**: Walking, Activities of Daily Living, Exercise, Fatigue, Heart Rate, COPD.

FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI

Effects of the use of a pulmonary rehabilitation protocol by telecoaching in patients with COPD

Letícia Leal[1]; Danielle Gonçalves[1]; Myllena Cutis[1]; Paulo Victor Mazeika[1]; Welerson Mendonça[1]; Yves de Souza[1]
[1]Fisioterapia, Universidade Veiga de Almeida, Cabo Frio/RJ – Brasil

Objective: To verify if our PR telecoaching protocol improves exercise capacity, activities of daily living (ADL) and muscle strength in COPD patients. Methods: A randomized controlled clinical trial of 20 patients with COPD (69±4 yr, 41±18 FEV1, %pred). All patients were initially evaluated using 6 minutes step test (6MST), Londrina ADL protocol, handgrip strength and postural control with functional reach test (FRT). After the evaluation, they were randomized into 2 groups: control group (CG) and intervention group (IG) and were distributed in different activities for 8 weeks. The CG was instructed to keep the clinical appointments and to maintain a healthy life habit and was invited to 1 presential visit per week to remind them of the importance of maintaining an active life. The IG was instructed to perform exercises sent by message application on the smartphone. The patient received exercise images weekly to perform once a day, and every week another exercise was added in a face-to-face appointment. After 8 weeks, 6MST, Londrina ADL protocol, Handgrip and FRT were evaluated again. Results: The comparison between differences in the groups resulted in: 6MST (CG=-1±24m vs. IG=27±42m p<0.05), Londrina ADL Protocol (CG=2±1 vs. IG=-26±17 p<0.05), Handgrip (CG=1±1cmH_2O vs. IG=3±1cmH_2O p<0.05), FRT (CG=2±1 vs. IG=4±2 p<0.05). **Conclusion:** The IG who performed telecoaching PR improved the exercise capacity, handgrip strength and the FRT, and decreased the time to performing Londrina-ADL protocol, differently from the CG that maintained their general state. **Keywords**: Rehabilitation, COPD, Exercise, Fatigue, Activities Of Daily Living, Breathing Exercises.

FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI

Does the size of the ergometer interfere with the results of the six-minute step test (TD6M)?

Rayana Nascimento[1]; Yuri Jeovani[1]; Gabriel Lobato[1]; Joanna Azevedo[1]; Murilo Macedo[1]; Yves de Souza[1]
[1]Physiotherapy, Universidade Veiga de Almeida, Cabo Frio/RJ - Brazil

Objective: To compare the results of TD6M, performed in 16.5 cm and 20 cm ergometers by healthy individuals. **Method**: Eleven healthy young individuals were evaluated in this cross-sectional study, with mean age of 24±5 years, no diagnosis of chronic diseases, non-smoking, and no osteomioarticular involvement that compromised walking or postural control. All were submitted to TD6M in an ergometer of 16.5 cm step height, and after a rest period, they also performed the TD6M in an ergometer of 20 cm step height. The final result of the TD6M, the maximum heart rate (HR) during the test, and the angulation of hip flexion of the dominant leg in the ascent of the two ergometers were measured. **Result**: The result of the 6MWT was 16.5cm=311±14 steps; 20cm=328±10 steps (p=0.301), the hip flexion angulation was 16.5cm=51±2 degrees; 20cm=55±3 degrees (p=0.067), and the maximum HR reached during the test was 16.5cm=118±11 steps; 20cm=104±17 steps (p=0.074). **Conclusion**: In the studied population, we found no difference between the values of the TD6M result, the dominant hip flexion angulation at the step climb, and the HR during the test. This allows us to say that, in healthy young subjects, the difference in ergometer height does not influence the TD6M result. **Keywords**: Exercise Test, Aerobic Exercise, Heart Rate, Step Test, Activities of Daily Living, Fatigue.

FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI

Evaluation of the effects of the rehabilitation program on functional capacity and quality of life of neurological patients

Jeanette Janaina Jaber Lucato[1],Renata Cleia Claudino Barbosa[1]; Patricia Salerno de Almeida Picanço[1]; Renato Fraga Righetti[2]
[1]Centro Universitário São Camilo – São Paulo-SP, Brazil; [2]Hospital Sírio Libanês – São Paulo-SP, Brazil

Objective: To outline the epidemiological profile of neurological patients attended at a school clinic in the cardiopulmonary and metabolic rehabilitation sector and to evaluate the effects of the rehabilitation program on the functional capacity and quality of life of these patients. **Methods:** A cross-sectional, retrospective study approved by CoEP (2.722.675). Data were collected at a school clinic where the patients' charts with neurological diseases were analyzed in the rehabilitation sector. Functional capacity information (through the Shuttle Walk Test and the 6-minute walk test - 6MWT) and quality of life (SF-36 questionnaire) were collected from the chart at the beginning of rehabilitation and after at least three months of training. Age data were expressed as mean ± standard deviation. For the Shuttle, TC6, and SF-36 data, a paired T-test was performed. The correlation between the Shuttle and the 6MWT was performed using the Pearson correlation test. A p<0.05 was considered significant. **Results:** Sixteen neurological patients were treated, six of whom were excluded for not completing the three months of training or because of the impossibility of performing the final test. The mean age of the patients included was 56.1±25 years, six were male, six were diagnosed with a stroke, two with Parkinson's disease, one Dubowitz Syndrome and one with multiple sclerosis. When comparing the initial and post-training shuttle, a statistical difference was found, with better performance after training (p=0.06). The same occurred with the 6MWT, where we found a better performance after the training (p=0.028). From the items evaluated in the SF-36, we found statistical difference only in the Physical Aspects domain (p=0.032). We found a strong positive correlation between shuttle and TC6 (0.75 correlation). **Conclusion:** From the ten patients included in the study (56.1±25 years), six were male and the majority had a diagnosis of stroke. The patients presented better performance in the shuttle and TC6 tests after training, showing the positive effects of the rehabilitation program on functional capacity. Regarding the evaluation of the SF-36 questionnaire, improvement was shown only in the physical aspects after training phase. **Keywords:** Exercise therapy, Quality of life, Stroke, Parkinson's disease, Multiple sclerosis, Physical therapy.

FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI

Analysis of hemodynamic parameters in subjects submitted to semi-immersive virtual reality in the emergency unit

Angélica Bologna Raposo[1]; Rafael Varago Fabri[2]; João Pedro Lucas Neves Silva[3]; Laís Manata Vanzella[3]; Ana Paula Coelho Figueira Freire[1]; Francis Lopes Pacagnelli[1]
[1]Universidade do Oeste Paulista - UNOESTE, Presidente Prudente-SP, BRASIL; [2]Escola Pública Estadual Professora Maria Ernestina Natividade Antunes, Indiana-SP, BRASIL; [3]Universidade Estadual Paulista Júlio de Mesquita Filho - UNESP, Presidente Prudente-SP, BRASIL

Objective: To compare acute effects of hemodynamic parameters against VR and conventional therapy (CT). **Methods:** This study was approved by the Research Ethics Committee (CAAE 90231418.6.0000.5515). Eleven patients with HF were admitted to the emergency unit at a hospital in the countryside of of São Paulo. The individuals were randomly allocated through sealed envelopes and received the CT method, and after 24 hours, were submitted to RV. The patients received a VR box - virtual reality glasses, and used the VR relax application. Heart rate, blood pressure, and oxygen saturation were measured before and after each session. Data were expressed as mean and standard deviation and the comparison between the two groups was calculated using Student's t-test, with a significance level of p<0.05. **Results:** No significant differences were found in hemodynamic parameters in hospitalized patients in the emergency unit when submitted to semi-immersive RV. **Conclusion:** Treatment with semi-immersive VR implemented in a hospital emergency unit has been shown to be a hemodynamically safe method and may be indicated. **Keywords:** Emergency hospital service. Hospitalization. Virtual reality. Cardiac insufficiency. Cardiac Rehabilitation. Hemodynamic Monitoring.

FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI

Correlation between the Londrina protocol of daily life activity and the six-minute walk test (6MWT) in patients with COPD

Paulo Victor Mazeika[1]; Welerson Mendonça[1]; Letícia Leal[1]; Danielle Gonçalves[1]; Myllena Cutis[1]; Yves de Souza[1]

[1]Physiotherapy, Universidade Veiga de Almeida, Cabo Frio/RJ – Brasil

Objectives: To correlate the Londrina protocol of daily life activity (Londrina-DLA) with a six-minute walk test (6MWT) in patients with COPD. **Method:** For this cross-sectional observational study, nine patients diagnosed with COPD were recruited according to the GOLD criteria (FVC/fev1<70), 4 men and 5 women, with a mean age of 61±7 years, with an average of FEV1=42% of the predicted value, without records of exacerbation in the last 3 months, in regular use of their medications. All were submitted to evaluation of the performance of activities of daily living using the time of completion of the Londrina-DLA protocol and a 6 Minute Walk Test (6MWT) to evaluate the exercise capacity. All values were recorded and the Londrina-DLA vs. 6MWT correlates were performed. The data are presented through the Pearson R value and p value, considered as statistically significant when p<0.05. **Results:** the mean duration of the Londrina-DLA was 300±117 seconds, 6MWT=368±78 meters. The found correlation values were: Londrina-DLA vs. 6MWT (r=0.519; p=0.039). **Conclusion:** in the studied population, we found a moderate correlation between the Londrina-DLA and the 6MWT. This study is being continued, aiming to increase the number of participants and the reliability of the data found. **Keywords**: Activities of daily living, walking test, exercise, COPD, rehabilitation and muscle strength.

FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI

Updates in the ventilator modes used in mechanical ventilation in patients with Acute Respiratory Distress Syndrome

Matheus Nascimento da Silva[1]; Lucas Angeletti de Menezes[1]; Bruno Nascimento de Almeida[1]; Jeanette Janaina Jaber Lucato[1]; Patricia Salerno de Almeida Picanço[1]

[1]Centro Universitário São Camilo, São Paulo, 2019

Objective: The study aimed to verify the updates of the ventilation modes in patients with Acute Respiratory Distress Syndrome in the intensive care unit. **Methodology:** This is a literature review of clinical trials of patients, over 19 years old, of invasive mechanical ventilation with Acute Respiratory Distress Syndrome (ARDS) published from 2009 to 2019 in the Pubmed and PEDro databases, all in English. The descriptors used were: Respiratory Distress Syndrome, Adult, Respiration, Artificial, Intensive Care Units and the Boolean operator AND. **Results:** 48 articles were found and with the inclusion criteria applied and the reading of the titles and abstracts, 18 articles were selected for final sampling. Among them, five used High-Frequency Oscillatory Ventilation (HFOV), which four compared with conventional ventilation, so that better gas exchange and pulmonary complacency were observed in one of the studies and in the others there was no reduction in mortality; thirteen articles used the intervention of protective ventilation with low tidal volume, four articles associated with the maneuver of alveolar recruitment and use of high PEEP verifying reduction of interalveolar fluid, improvement of ventilation rate and reduction of mortality; two other papers reported on the sighing maneuver for alveolar reaeration in patients ventilated at supportive pressure and the use of high levels of PEEP on spontaneous ventilation. **Conclusion:** The use of HFOV may increase the hospital mortality rate in cases of severe ARDS. Protective ventilation is the most used and associated to the alveolar recruitment decreases the days of ventilation and hospitalization in the intensive care unit. However, some studies have shown that in moderate to severe cases, high levels of PEEP and reduction of tidal volume increase mortality, acidosis and hypercapnia associated with impairment of ventricular and hemodynamic function. Others have shown that the use of low ventilatory support levels with high levels of PEEP has increased the fraction of ventilation in lung regions providing homogeneous ventilation. The sigh technique has improved oxygenation and needs further research in the treatment of ARDS in spontaneous ventilation. **Keywords:** Respiratory Distress Syndrome, Adult. Respiration, Artificial. Intensive Care Units.

FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI

Bronchial hygiene techniques in patients undergoing invasive mechanical ventilation: a literature review

Fabiana Gomes dos Santos[1]; Larissa Rocha Lopes[1]; Patricia Salerno de Almeida Picanço[2]

[1]Graduanda de Fisioterapia do Centro Universitário São Camilo, São Paulo-SP; [2] Professora do Centro Universitário São Camilo, São Paulo-SP

Objective: to evaluate which technique of bronchial hygiene in patients under mechanical ventilation (IMV) is more frequently studied by the scientific community. **Methods:** the methodology used was the literature review. The search was carried out in the databases PubMed, Lilacs and Medline during the month of May 2019. The following search strategy was adopted: descriptors “Therapeutics”, “Airway Management” “Respiration, Artificial”, “Respiratory Therapy”, “Physical Therapy Modalities”, “Rehabilitation” with the boolean operator “AND” between words. The scientific articles included were published in Portuguese and English, in the last ten years, performed in humans that use bronchial hygiene techniques as treatment in adult patients submitted to IMV. **Results:** 219 articles were found in total, of which 8 were used in this study following the inclusion criteria. Four articles (27%) described the use of manual hyperinflation, which includes ventilator disconnection followed by pulmonary insufflation with a manual resuscitator associated with chest compression with or without vibration. Three articles (20%) described chest compression, which consists of manually compressing the rib cage during expiration. Two articles (13%) described chest percussion, a procedure of rhythmic waves of mechanical energy applied manually over the thorax. Two articles (13%) described vibrocompression, vibration associated with chest compression. Two other articles (13%)

described the postural drainage in which the patient is positioned so that the pulmonary segment to be drained is favored by the action of gravity. One article (7%) described manually assisted cough, chest compression at the beginning of the expiratory phase; and one article (7%) described PEEP-ZEEP consisting of pulmonary insufflation through an increase followed by abrupt reduction of positive end-expiratory pressure associated with bilateral thoracic compression. **Conclusion:** the bronchial hygiene technique more frequently studied by the scientific community was manual hyperinflation. However, few randomized controlled trial articles comparing the techniques, relating their effectiveness, were found. Thus, the need for further studies is evident. **Keywords:** Therapeutics. Airway management. Respiration, artificial. Respiratory therapy. Physical therapy modalities. Rehabilitation.

FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI

The influence of dance intervention in posture, balance and respiratory aspects in patients with Parkinson Disease

Gabriela de Souza Ferreira[1]; Marcia Midori Morimoto[2]

[1]Discente do Curso de Fisioterapia da Universidade Metodista de São Paulo; [2]Fisioterapeuta, Mestre em Neurociência e comportamento pela USP, docente do Curso de Fisioterapia e Psicologia na Universidade Municipal de São Caetano do Sul

Objective: To verify the dance impact on alterations of balance and posture and the correlation with the respiratory parameters. **Methods:** The posture evaluation was made using the SAPO software, Best Test for balance and the respiratory parameters were checked (PEmáx, PImáx, PFE, VEF1 and expansibility) in seven individuals diagnosed with PD before and after twelve sessions with dance intervention. **Results**: After the intervention there was a statistically significant improvement in the values of the best test, in the biomechanics restrictions, transitions and anticipatory adjustments, and sensory guidance, in Trunk target observed in the front view and on PEmáx. **Conclusion:** The use of dance in patients with PD brings advantages for the postural alignment and for balance control. Better postural control influenced the favorable changes in respiratory parameters, mainly related to expiration strength, probably due to the better biomechanical alignment. **Keywords**: Parkinson's Disease. Balance. Posture. Respiratory Function. Dance.

FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI

Post-extubation high-flow oxygen therapy in patients with low risk of failure

Matheus Pereira Bateloche[1]; Cássio Stipanich[2]; Catherine Oliveira[1]; Clarice Tanaka[3]

[1]Fisioterapeuta da Divisão de Fisioterapia do ICHC-FMUSP, São Paulo, SP, Brasil; [2]Fisioterapeuta Gestor da Central Informatizada de Equipamentos e Gestor de Relacionamento da Divisão de Fisioterapia do ICHC-FMUSP, São Paulo, SP, Brasil; [3]Professora Titular do Departamento de Fisioterapia, Fonoaudiologia e Terapia Ocupacional e Diretora da Divisão de Fisioterapia do ICHC-FMUSP, São Paulo, SP, Brasil

Objective: High oxygen flow therapy (HFOT) has been increasingly consolidated as an important tool in the therapeutic arsenal of professionals working in Intensive Care Units (ICUs). One of the clinical scenarios in which the use of HFOT has gained prominence is post-extubation to reduce the number of reintubations required, and its associated complications. Specifically in postoperative patients with low risk of reintubation, the clinical benefits of HFOT still require scientific validation. Therefore, the objective of this study was to evaluate and compare the application of HFOT and conventional oxygen therapy (COT), post-extubation in surgical patients with low risk of reintubation. **Methods:** This was a pilot study performed at two surgical ICUs of a Brazilian teaching hospital, which screened all patients on invasive mechanical ventilation (IMV) for less than 72 hours, and included patients considered as low risk of reintubation. Primary endpoint was defined as reintubation rate, and secondary outcomes such as length of stay at the ICU and at the hospital. The Kolmogorov-Smirnov test was performed to identify the sample distribution, Student's t-test or Mann-Whitney test were applied as appropriate. The Cohen d test was also applied for effect size calculation. Data were presented as mean and standard deviation (SD) or median and interquartile range (IR) when indicated. **Results:** There were no reintubations in the two groups. None of the patients died during their stay in the ICU. There were no statistically significant differences between the vital signs or comfort scale between the two groups. The ICU length of stay was lower in the HFOT group (mean=5 days, SD=2.21) compared to the COT group (mean=7 days, SD=4.75), but did not reach statistical significance (p=0, 11). Cohen's test showed moderate effect size (d=0.75). **Conclusion:** The present study did not have a sample of sufficient size to detect statistically significant differences between the groups. The length of ICU stay was considerably lower in the TAF group, which may have important clinical and financial repercussions for patients and hospitals. Further studies are needed to understand the true role of TAF in this specific population. **Descriptors:** Oxygen Inhalation Therapy, Noninvasive Ventilation, Respiratory Insuficiency, Airway Extubation, Adults, Cannula.

FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI

High-flow Oxygen Therapy: A extensive systematic review with meta-analysis

Matheus Pereira Bateloche[1]; Cássio Stipanich[2]; Clarice Tanaka[3]

[1]Fisioterapeuta da Divisão de Fisioterapia do ICHC-FMUSP, São Paulo, SP, Brasil; [2]Fisioterapeuta Gestor da Central Informatizada de Equipamentos e Gestor de Relacionamento da Divisão de Fisioterapia do ICHC-FMUSP, São Paulo, SP, Brasil; [3]Professora Titular do Departamento de Fisioterapia, Fonoaudiologia e Terapia Ocupacional e Diretora da Divisão de Fisioterapia do ICHC-FMUSP, São Paulo, SP, Brasil.

Objective: The goal of this paper was to perform a systematic review and a meta-analysis of randomized controlled trials (RCT), encompassing the treatment of patients suffering from acute respiratory failure (ARF) and extubation failure prevention. **Methods:** Medline, Embase and

Pubmed were searched for studies which evaluated the application of high-flow oxygen therapy (HFOT) in comparison to conventional oxygen therapy (COT) and/or noninvasive mechanical ventilation (NIV) for ARF treatment or extubation failure prevention. Outcomes analyzed were intubation rate, mortality and adverse events (AE). The outcomes were presented as odds ratio (OR) or risk ratio, as appropriated, with 95% confidence interval (CI). We used RevMan 5.3 for data analysis. **Results:** Fifteen RCT totalizing 4305 patients were analysed. When compared to COT, HFOT reduced the need for intubation in patients with ARF (OR 0.72, CI 0.57-0.91) and post-extubation (OR 0.47, CI 0.31-0.71). There was no significant reduction in mortality neither in patients with ARF (OR 0.82, CI 0.65-1.03) nor post-extubation (OR 1.00, CI 0.55-1.82). It was not possible to divide the analysis comparing HFOT with NIV in clinical scenarios, because only three studies compared both therapies, two of them being non-inferiority studies, and on both, HFOT was not inferior to NIV. HFOT had the same intubation rate (OR 1.00, CI 0.78-1.27), with no significant difference in mortality (OR 0.89, CI 0.62-1.29). The number of AE reported by studies, using HFOT was significantly lower compared to COT (4.13% vs 19.82%, RR 0.20, p<0.001, CI 0.16-0.26), and to NIV (4.13% vs 20.68%, RR 0.21, p<0.001, CI 0.16-0.26). **Conclusion:** HFOT reduces intubation rate and possibly mortality in patients with ARF and post-extubation compared to COT, and can be considered non-inferior to NIV. HFOT is a safe therapy, with numbers of AE significantly lower. **Descriptors:** Oxygen Inhalation Therapy, Noninvasive Ventilation, Respiratory Insuficiency, Airway Extubation, Adults, Cannula.

FISIOTERAPIA CARDIORRESPIRATÓRIA E EM UTI

Effects of manual therapy in patients with COPD: literature review

Emerson Araujo Freire[1]; Andreza Marinho de Oliveira[1]; Artur Hatzlhoffer Lourenço[1]; Jeanette Janaina Jaber Lucato[1]; Renata Cleia Claudino Barbosa[1]; Patricia Salerno de Almeida Picanço[1]

[1]Centro Universitário São Camilo, São Paulo, 2019

Objective: to assess the efficiency of manual therapy techniques and identify their benefits to the COPD in their different phases. **Methods**: The bibliographic search was performed on the databases Scielo, Lilacs, PEDro and Pubmed, using the general descriptors: “COPD”, “manual of therapy”, “myofascial release”, “stretching”, “pompage” and their correspondents in English. The inclusion criteria were: articles published between 2008 and 2019, cross-sectional studies, case study, experimental drawing and randomized clinical trials. The exclusion criteria were: articles that addressed other changes besides COPD; review articles, articles not about manual therapy, maneuvers of bronchial hygiene and validation of scales. **Results**: 170 articles were found but only 15 fulfilled the inclusion criteria. TM has been shown to reduce residual volume, respiratory rate, heart rate, O_2 consumption, CO_2 concentration and reduction of thoracic kyphosis. These very articles make reference to lumbar mobility, thoracic expansion, diaphragmatic mobility, pulmonary volumes, expiratory time, tidal volume, vital capacity, forced vital capacity, forced expiratory volume in the foreground, maximal inspiratory pressure, maximum expiratory pressure, saturation, inspiratory capacity , increase of walking distance in the 6-minute walk test and improved perception of fatigue and dyspnea. **Conclusion**: Based on the evidence, TM is an efficient method to treat COPD patients. Therefore, TM should become part of a pulmonary rehabilitation program as an alternative treatment for this individual, in order to potentiate a therapy. **Keywords**: COPD, manual therapy, myofascial delivery, stretching, pompage, physiotherapy.

FISIOTERAPIA PÉLVICA E SAÚDE DA MULHER

Acting of physiotherapy in public policies for integral health care of women: An integrative review

Ana Jessica dos Santos Sousa; Karoline Luanne Santos de Menezes; Georgia de Melo Castro Gondim; Mayle Andrade Moreira; Simony Lira do Nascimento

Objective: To describe the scientific production on physiotherapy in the context of public policies on women’s health, according to the PNAISM’s guidelines. **Methodology:** It is an integrative review carried out in April 2019. The search was carried out in virtual databases through Capes journals and in the Biblioteca Virtual da Saúde - BVS (Virtual library containing articles related with health care): MEDLINE, LILACS; SciELO; according to the PICO structure: P (woman or woman’s health), I (“public policies” or “Physical Therapy”); and O (“health completeness” or “primary health care”). **Results:** Initially, the research resulted in 121 articles, however, 99 had inconsistent titles with the purpose of this study. Of the remaining 22, 12 were excluded after analysis of their abstract, and the final sample consisted in 10 articles. A table was presented with the PNAISM Guidelines by axes, according to the possibilities of physiotherapeutic performance, this table being related to the articles found in the databases that fit the corresponding axis. The 10 articles found corresponded to 5 axes of the PNAISM: Obstetric and neonatal care; Morbimortality due to cancer in the female population; Attention to women health in the elderly; Attention to the health of women in prisons; and Participation and social control in the definition and implementation policies for integral health care for women. **Conclusion:** Although the physical therapist’s range of possibilities for ensuring the integral care of women’s health has been evidenced, there is a lack of scientific production on this topic, mainly involving the other guidelines of the policy, that were not in this study, which points to the need for further studies to be carried out in this area. **Keywords (MESH):** Public Policies; Physical Therapy Specialty; Women’s Health; Women; Female; Women’s Health Services.

FISIOTERAPIA PÉLVICA E SAÚDE DA MULHER

Behavioral attitude questionnaire of the menstrual period: elaboration and validation

Angela dos Santos Martins[1]; Nelson Carvas Junior[2]; Patricia Andrade Batista[3]

[1]Especializando em Obstetrícia da Faculdade de Medicina da Universidade de São Paulo, Brasil; [2]Departamento de Fisioterapia, Universidade Ibirapuera, São Paulo, Brasil. Departamento de Pós- Graduação Instituto de Medicina Preventiva da Faculdade de Saúde pública, São Paulo, Brasil; [3]Departamento de Fisioterapia, Universidade Ibirapuera, São Paulo, Brasil. Departamento de Obstetrícia e Ginecologia da Faculdade de Medicina da Universidade de São Paulo, São Paulo, Brasil.

Objective: To elaborate and validate a questionnaire on the behavioral attitudes of the menstrual period. **Methodology**: A questionnaire of behavioral attitudes of the menstrual period was elaborated with 14 statements. With approval by the Ethics on Human Research Committee of the Ibirapuera University under number 2.992.998, with approval date 10/31/2018. The questionnaire was answered printed by university students. They signed the Term of Free and Informed Consent. Inclusion: age between 18 and 45 years old. Exclusion: pregnant women, participants in contraceptive method that suspend the menstrual cycles and participants with gynecological pathologies that alters the menstrual cycle, such as fibroid and endometriosis. After 4 days of application of the questionnaire, a sub-sample was recruited for the validation of the retest test through the application of the questionnaire in the online format. The data were tabulated in a Microsoft Excel spreadsheet and transported to the R program for statistical analysis. **Results:** Sample comprised of 67 participants who responded to the questionnaire's printed format. The scores attributed to each item included in the model, in general, present a normal distribution, suggesting the legitimacy of the exploratory factorial analysis, which distributed the items into two factors being positive and negative attitudes. There are two affirmations that indicate that most college girls, both positive and negative, feel during the menstrual period, that they are "my companion says that I get irritated during the menstrual period" (negative) and "I feel great during the period" (positive). The Factorial Confirmatory Analysis supports the hypothesis of the presence of two factors, factorial loads ranging from 0.49 to 0.98 accompanied by satisfactory residual variances. **Conclusion:** In the development of the instrument, the relevance and ease of understanding of the items by the population was considered. The instrument was simple, of easy application and understanding, and can be self-applied. It presents validity of content and good reliability; however, it has not been compared to another instrument, since it does not have criterion validity. The results we obtained allow us to emphasize the importance of continuing the investigations in the subject so that we can evaluate several aspects of the behavior throughout the MC. **Keywords**: Questionnaire, menstrual cycle, behavior, quality of life.

FISIOTERAPIA PÉLVICA E SAÚDE DA MULHER

Verbal commands as a method for awareness of the pelvic floor

Laura Noronha Silva[1]; Rodrigo Quadros Altieri Martinez[1]; Andrea Scarlato[2]

[1]Faculdades Metropolitanas Unidas; [2]Instituto Central do Hospital das Clínicas FMUSP

Objectives. The goal of this study was to identify the verbal commands for activating the pelvic floor, used by physical therapists with patients. As part of the research, the commands were reviewed along with scientific literature on this topic. **Method.** This project has been approved by the Ophtal's Comitee of Ethics for Research with Humans. The researcher has followed the ethics guidelines according to item 466/2012. All participants gave consent before participating in the research methods. This exploratory research included interviews with 20 physical therapists from São Paulo, Brazil. All participants were experts in Pelvic Physiotherapy and Pilates. Sixty-four verbal commands were identified during the interviews. They were listed and organized on spreadsheets to facilitate understanding. **Results.** Multiple types of commands were identified during this study. On one hand, commands related to mictional and anal functions were frequently used by pelvic physical therapists. On the other hand, commands that are ludic and based on imagination were more common among Pilates instructors. Still, both types of commands were used in some extent by both areas. **Conclusion.** Verbal commands are important for facilitating communication between physical therapists and patients. However, this topic has not been widely explored by scientific research. Further exploration can be useful for improving clinical practice and communication. **Keywords:** Pelvic floor; Awareness; Perineum; Physical Therapy Modalities; Exercise Movement Techniques; Models, Educational.

FISIOTERAPIA PÉLVICA E SAÚDE DA MULHER

Tibial nerve stimulation in women with nocturia: pilot study

Juliana Falcão Padilha[1]; Ana Paula Rodrigues Rocha[1]; Mariana Arias Avila[1]; Patricia Driusso[1]

[1] Physical Therapy Post-Graduate Program, Federal University of São Carlos (UFSCar), São Carlos – SP, Brazil

Objective: The aim of this work was to investigate whether nocturia decreased after treatment with transcutaneous tibial nerve electrostimulation (TTNS). **Methods:** This study was approved by the Ethics and Research Committee of the Federal University of São Carlos and all participants signed the Term of Free and Informed Consent. The participants in the study were 16 women over 18 years, nonsmokers and with nocturia, assessed using the specific question of the King's Health Questionnaire (KHQ): "Nocturia: Do you wake up at night to urinate?". An anamnesis record was used to collect anthropometric and sociodemographic data and the Incontinence Questionnaire Overactive Bladder (ICIQ-OAB) was used to investigate nocturia and quality of life, pre and post treatment. For the TTNS, balanced symmetrical biphasic pulsed current was used twice a week for a total of 12 sessions. The parameters used were Frequency: 10 Hz, Pulse Duration: 200 µs, Time: 20 minutes. For the quantitative variables the mean and standard deviation (SD) were performed. The normality of the data was tested by the Shapiro-Wilk test. To analyze the nocturia we compared the means of the result of question 4a of ICIQ-OAB (4a. During the night, how many times, on average, do you have to get up to urinate?), pre and post treatment, by the paired Wilcoxon test. We also compared

the means of the total ICIQ-OAB score for analysis of the quality of life before and after treatment by paired t-test. A significance level of 5% was considered in all tests. **Results:** The mean age of the sample was 41 years (SD±13.18) and the mean body mass index (BMI) was 28.88 kg/m² (SD±9.57). When comparing nocturia pre and post treatment, the pre treatment average was 1.88 (SD±1.08) and post treatment was 0.94 (SD±0.77) (p=0.0013). In relation to quality of life the total score ICIQ-OAB pre resulted in 8.88 (SD±2.82) and post 4.75 (SD±2.87) (p<0.0001). **Conclusion**: There was a decrease in nocturia post treatment with TTNS as well as an improvement in quality of life. **Descriptors**: Nocturia; Transcutaneous Electric Nerve Stimulation; Quality of Life; Women Health Services; Physical Therapy Specialty; Tibial Nerve.

FISIOTERAPIA PÉLVICA E SAÚDE DA MULHER

Effects of verbal commands on the activation of compensatory mechanisms to perineal contraction

Jordana Barbosa da Silva[1]; Ana Paula Rodrigues Rocha[1]; Tatiana de Oliveira Sato[1]; Patricia Driusso[1]

[1]Postgraduate Program in Physiotherapy, Department of Physical Therapy, Center for Biological and Health Sciences, Federal University of São Carlos, São Carlos / SP

Objective. To verify the effect of verbal commands and the ability to contract the female pelvic floor muscle (PFM). **Methods**. Cross-sectional study with 81 women (42±17 years), approved by the Ethics and Research Committee on Human Subjects of the Federal University of São Carlos (CAAE: 51999415.9.0000.5504), conducted at the "Laboratório de Pesquisa em Saúde da Mulher", Physical Therapy Department. Two evaluators performed the data collection: one conduced the anamnesis, and the second performed the visual inspection of the PFM, with the participant on dorsal decubitus, with flexed hips and knees, feet supported and pelvic region naked. Two contractions of the PFM were requested: before (P1) and after (P2) receiving simple verbal commands. At P1, women were instructed to contract "as if they were holding the pee". At P2, the instructions were: "1) Contract your muscles up and in; 2) Inhale when you have relaxed your muscles and exhale while you are contracting the musculature; 3) Try not to contract the abdomen, glutes, or leg muscles while contracting pelvic floor muscles". During the inspection of P1 and P2, the evaluator observed the correct closure of the pelvic openings, in addition to the use of the compensatory mechanisms of PFM contraction. The data were analyzed in the SPSS program, (v 22.0). The normality of the data was evaluated by the Kolmogorov-Smirnov test and the difference between P1 and P2 was tested using the Wilcoxon test, with a significance level of 5%. **Results**. There were significant differences (between P1 and P2) for glutes contraction (P1=25.9%; P2=6.2%; p<0.01), adductors (P1=28.4%; P2=12.3%; p<0.01), others moviments associate (P1=8.6%, P2=1.2%; p=0.01) and apnea (P1=88.9%; P2=29.6%; p<0.01). There was also a higher proportion of isolated contraction of PFM at P2 (P1=1.2%; P2=6.2%; p=0.01). No significant differences were found for contraction of the abdominal muscles (P1=86.4%; P2=81.5%; p=0.24). **Conclusion**. The use of accessory muscles was smaller and the isolated PFM contraction was more frequent after the verbal commands of the evaluator. **Keywords**: Pelvic floor, Perineum, Muscle contraction, Physical therapy, Women's Health, Physical Therapists.

FISIOTERAPIA PÉLVICA E SAÚDE DA MULHER

Association between route of delivery with the perception of primigravidae about perineal massage

Jordana Barbosa da Silva[1]; Bianca Manzan Reis[1]; Patricia Driusso[1]

[1]São Carlos, Post-Graduation Program in Physical Therapy, Federal University of São Carlos (UFSCar), SP, Brazil

Objective: To identify the association of the perception of primigravidae on the prenatal perineal massage with the route of delivery. **Methods**: Cross-sectional study, approved by the Research Ethics Committee of the Federal University of São Carlos (CAAE: 74068617.9.0000.5504) and conducted at the Women's Health Research Laboratory at the Physiotherapy Department. Forty-one primigravidae (24 women who underwent a vaginal delivery and 17 women underwent cesarean section) participated in this study, with a mean age of 29,4 years (SD=±5.1). Initially, the participants underwent a training of perineal massage technique, which consisted of a sequence of four exercises in the pelvic floor musculature, including circular movements, semicircles, digit-pressure and U-shaped movements. The pregnant women were instructed to start the technique at home from the 34th gestational week, once a day. After 45-60 days of delivery, the participants answered a questionnaire composed of 14 objective questions regarding the acceptability of perineal massage, technical assistance in preparation for childbirth, participation of the partner and the effect of massage on childbirth. Two specific questions were addressed only to women who delivered by vaginal access. Each question contained three options: "yes," "no," "I do not know." Statistical analysis was performed using the chi-square test, with a significance level of 5%. **Results**: The item "Prepared me physiologically for my delivery" was significantly associated with vaginal delivery (p=0,01). No significant differences were found for the other scales of the questionnaire. **Conclusion**: Women who had vaginal delivery evaluated that perineal massage helped them to prepare for childbirth. **Keywords**: Pregnancy, Pelvic Diaphragm, Physiotherapy, Cesarean section, Normal birth, Perineum.

FISIOTERAPIA PÉLVICA E SAÚDE DA MULHER

Pelvic floor dysfunctions in peri- and post-menopausal women

Thainá Tolosa De Bortolli[1]; Mariana Saory da Silva Ivata[1]; Beatriz Souza Harada[1]; Gabriela Marini[1]

[1]Universidade do Sagrado Coração

Objective: To verify the frequency of pelvic floor dysfunctions in peri- and post-menopausal women. **Methods:** Cross-sectional observational study. 43 Women in the peri- and post-menopausal phase participated in the study. The evaluation consisted of an identification form, ICIQ-

SF questionnaire for urinary incontinence, Wexner's questionnaire for fecal incontinence and data on sexual history. The physical evaluation of the pelvic floor was performed to identify prolapses (classification of Baden and Walker). The research was approved by the Research Ethics Committee (Opinion 2.094.485). **Results:** Of the 43 women evaluated, 55.8% reported urinary incontinence, being 12.5% of urgency urinary incontinence, 25% by exertion and 62.5% mixed. 7% reported fecal incontinence, and 23% of women with active sexual life presented dyspareunia, being 43% of light intensity, 28.5% moderate and 28.5% severe. From the sample, 69.7% reported having an active sexual life, and reported the presence of the phases of sexual response, as desire (90%), excitation (83.3%) and orgasm (70%). In the physical evaluation of the pelvic floor, 60.4% had genital prolapses of the anterior wall. **Conclusion:** More than 50% of the women evaluated during the peri- and post-menopause period presented mixed urinary incontinence and pelvic organ prolapses, followed by pain during sexual intercourse and a small percentage of fecal incontinence. Thus, it is concluded that pelvic floor dysfunctions are frequent and measures of prevention and rehabilitation of physiotherapy in women's health are extremely important to ensure better quality of life for this population. **Keywords:** Perimenopause; Pelvic Floor; Urinary Incontinence; Fecal Incontinence; Pelvic Organ Prolapse; Sexual Dysfunction, Physiological.

FISIOTERAPIA PÉLVICA E SAÚDE DA MULHER

Risk factors for urinary incontinence in peri-and post-menopausal women

Gabriela Marini[1]; Thainá Tolosa De Bortolli[1]; Mariana Saory da Silva Ivata[1]; Beatriz Souza Harada[1]
[1]Universidade do Sagrado Coração

Objective: To verify the presence of risk factors for urinary incontinence in women in peri- and post-menopause. **Methods:** Cross-sectional observational study. The study included 43 women in peri- and post-menopause. The evaluation consisted of an identification form (name, age and body mass index), gestational history (number of pregnancies, parity, weight of children at birth and maternal weight gain during pregnancy) and life habits (practice of physical exercise, constipation, chronic cough, caffeine intake and family history of urinary incontinence). The research was approved by the Research Ethics Committee (Opinion 2.094.485). **Results:** From the 43 women evaluated, the mean age was 61±5.49 years; body mass index of 26.9±5.16 kg/m2; 13.9% nuligravidic; mean number of pregnancies and parity of 2.10±1.27 and 2.05±1.06, respectively. The mean weight of the newborn was 3476±1056 grams, and the highest maternal weight gain during pregnancy was 12.54±6.14 Kg. 60.4% reported practicing regular physical exercise; 30.2% of the women complained of intestinal constipation; 7.5% reported chronic cough; 65% consumed on average two cups of coffee daily and 47.5% reported having a family history of urinary incontinence. **Conclusion:** Women in the peri- and post-menopausal period already have aging as a risk factor for urinary incontinence, thus verifying other factors described in the literature might be helpful for the physiotherapist to plan preventive measures and health education for this population. **Keywords:** Health Education; Risk Factors; Physical Therapy Specialtty; Urinary Incontinence; Perimenopause; Women's Health.

FISIOTERAPIA PÉLVICA E SAÚDE DA MULHER

Relationship of pelvic floor muscle function with clinical and obstetric variables in women in peri- and post-menopause

Gabriela Marini[1]; Mariana Saory da Silva Ivata[1]; Beatriz Souza Harada[1]; Bruna Varanda Pessoa-Santos[1]
[1] Universidade do Sagrado Coração

Objective: To verify whether there is a correlation between pelvic floor muscle function and clinical and obstetric variables in women in peri- and post-menopause. **Method:** This is a cross-sectional study with women in peri- and post- menopause, between 50 and 75 years of age. All participants who signed the free and informed consent form responded to sociodemographic, clinical and obstetric questions, evaluation of anthropometric measurements and measurement of abdominal inter-reto distance performed with a digital caliper. Physical evaluation to verify pelvic floor muscular function was performed by digital palpation, perineometry (Peritron equipment) and vaginal dynamometer. The research was approved by the Research Ethics Committee (Opinion n. 2.094.485). **Results:** 43 women with a mean age of 61±5.49 years were evaluated. There were negative correlations between parity and number of pregnancies with the item strength of the PERFECT scale (r=-0.389 and R=-0.364, respectively) and between parity and the maximum force value (Kgf) (r=-0.413). Significant positive correlations were found between weight gain during pregnancy with higher values of rectus abdominis muscle diastasis (r=0.39), number of pregnancies (R = 0.476) and parity (R=0.456). Positive correlations were also observed between the maximal contraction pressure with the strength value of the PERFECT scale (r=0.509), the maximum force value (Kgf) (r=0.686), and the endurance in seconds (r=0.439); and between the endurance value with the strength value of the PERFECT scale (r=0.374). **Conclusion:** It is concluded that, the higher the number of pregnancies and parity, the lower the value of the item strength on digital palpation; and the higher the parity, the lower the maximum force value (Kgf) of the fast fibers. As well, the higher the maximal contraction pressure of the pelvic floor, the greater the force on palpation, the maximum strength (Kgf) and the muscular endurance; and the greater the endurance, the greater the muscular strength. It was also observed that, the greater the weight gain during pregnancy, the greater the size of the diastasis of the rectus abdominis. **Keywords:** Pelvic Floor; Physical Therapy Modalities; Muscle Strength; Perimenopause; Rectus Abdominis; Women's Health.

FISIOTERAPIA PÉLVICA E SAÚDE DA MULHER

Comparison between vaginal palpation and manometry with body mass index

Ana Paula Rodrigues Rocha[1]; Jordana Barbosa da Silva[1]; Tatiana Oliveira Sato[1]; Andreza Cristine Arcari da Silva[2]; Bruna Raquel Caracciolo[2]; Patricia Driusso[1]

[1]Programa de Pós-Graduação em Fisioterapia, Departamento de Fisioterapia, Centro de Ciências Biológicas e da Saúde, Universidade Federal de São Carlos, São Carlos/SP; [2]Curso de Fisioterapia, Departamento de Fisioterapia, Centro de Ciências Biológicas e da Saúde, Universidade Federal de São Carlos, São Carlos/SP

Objective: To relate vaginal palpation and manometry with body mass index (BMI) in women. **Methods**: Cross-sectional study with the approval of the Research Ethics Committee (CAAE: 51999415.9.0000.5504) performed in the city of San Carlos/SP, with 168 women (40.4±16.5 years; 26.1±6.13 kg/m²), age over 18 years. The evaluation of the pelvic floor muscles (MAP) was carried out by vaginal bidigital palpation and manometry (PeritronTM). Three maximal voluntary contractions of MAP were requested after verbal instruction, classified by the Oxford Modified scale. The manometry test was performed by introducing the probe into the vaginal canal of the volunteer; after the instrument calibration, the volunteer was instructed to perform the contractions with a "move up and inside" with the MAP. Body mass index (kg/m²) was calculated using the body weight and height values, measured by a portable scale and estadiometer. **Statistical analysis**: Due to the lack of normality of data (Komolgorov-Smirnov test) a Spearman correlation was performed. Statistical significance was set at values below 5%. **Results**: The results show a negative and significant correlation between BMI and vaginal palpation (r=-0.283, p-value=0.01); negative correlation between BMI and manometry (r=-0.205, p-value=0.01). **Conclusion**: The MAP function showed a negative correlation between BMI and digital vaginal palpation and between BMI and manometry, indicating that obese women tend to present lower maximum voluntary contraction of the pelvic floor musculature. **Keywords**: Physiotherapy; Pelvic Floor; Perineum; Body Mass Index; Women's Health.

FISIOTERAPIA PÉLVICA E SAÚDE DA MULHER

Correlation between sexual abuse and the presence of perineal pain in women with bladder pain syndrome

Daniele Braz Mota[1], Amanda Paixão Santos[1], Claudia Rosenblatt Hacad[1], Suehellen Anne Rocha Milhomem[1], Clarice Tanaka[1]

Universidade de São Paulo - USP – São Paulo – Brasil

Objective: To verify the correlation between sexual abuse and the presence of perineal pain in women with Bladder Pain Syndrome (BPS) and the impact on sexual activity and quality of life. **Methods:** We performed a cross-sectional study in women with CPPS and asymptomatic (for comparison purposes). All participants were assessed by specialized physiotherapists through a medical history data, questions about emotional and/or sexual abuse experience, application of validated questionnaire of pain (VAS), quality of life (WHOQOL-brief), sexual function (FSFI) and a physical examination. **Results:** Fifty-two women, mean age of 50.3±12.9, were assessed. Of these, 26 had a diagnosis of BPS (G1) and 26 were asymptomatic (G2). Related to sexual function, 10/26 women (39%) in G1 were sexually active and all of them reported dyspareunia compared to 12/26 women (46%) and 4/12 (33%) in G2, respectively (p=0.002). Related to emotional and/or sexual abuse experience, 54% of the women in G1 reported one or both personal experiences compared to 23% in G2 (p=0.002). Perineal pain was observed in 92% of women in G1. Related to the intensity (VAS), a higher pain score was observed in women with sexual abuse compared to those who had only emotional abuse. We observed a negative and moderate correlation demonstrating that the higher was the pain, the worse was the sexual satisfaction of women with CPPS (Spearman's rho=0.39; p=0.064) and lower scores of sexual satisfaction means worse quality of life, respectively (Spearman's rho=0.45, p=0.020). **Conclusion:** It was observed that sexual abuse was correlated to perineal pain in women with Bladder Pain Syndrome, causing a significant impact on sexual activity and overall quality of life. More studies are necessary to justify our findings. **Keywords:** pelvic pain; bladder pain syndrome; sexual abuse; physiotherapy; pelvic floor dysfunction; trigger points

FISIOTERAPIA PÉLVICA E SAÚDE DA MULHER

The Effects of Physiotherapy Intervention on Low Back Pain in Women with Bladder Pain Syndrome

Beatriz Frate[1]; Lorrane peixoto Jambeiro[1]; Claudia Rosenblatt Hacad[1]; Suehellen Anne Rocha Milhomem[1]; Clarice Tanaka[1]

Universidade de São Paulo - USP – São Paulo – Brasil

Objective: To evaluate the effects of physiotherapy intervention on low back pain in patients with Bladder Pain Syndrome (BPS). **Methods:** A randomized clinical study was conducted. We included 24 women with the diagnosis of BPS according to NIH criteria, who referred low back pain, with minimum age of 18 years old. Oncological patients, previous pelvic radiotherapy, systemic or neurological diseases that compromised the pelvic structures or organs and cognitive deficit were excluded. The patients were evaluated by specialized physiotherapists through a history data, application of validated questionnaires of pain (VAS), quality of life (WHOQOL-brief) and physical examination. Then, patients were randomized (random.org) in 2 groups of treatment: Group 1 (G1) consisted of 10 weekly sessions of Biofeedback (BF), myofascial trigger point (MTP) release and electro neurostimulation (TENS); and Group 2 (G2) with 10 weekly sessions of Biofeedback (BF), myofascial trigger point (MTP) release and postural exercises. **Results:** Twenty-two patients concluded the treatment, mean age 52.77±10.94 years. After treatment, G1 and G2 groups showed a significant improvement in the active lumbar trigger points VAS score (p=0.044 and p=0.011, respectively) and low back pain VAS score (p=0.004 and p=0.007, respectively) when compared to pre-treatment score. **Conclusion:** Physiotherapy intervention showed a significant improvement of low back pain in women with BPS. Further controlled studies are necessary to assure our findings. K**eywords:** Pelvic Pain; Bladder Pain Syndrome; Low Back Pain; Physiotherapy; Biofeedback; Quality of Life.

FISIOTERAPIA PÉLVICA E SAÚDE DA MULHER

Prevalence of Constipation and the Impact on Quality of Life in Women with Bladder Pain Syndrome

Ayra Mora[1]; Gabriela Brenda Souza Ribeiro; Claudia Rosenblatt Hacad[1]; Suehellen Anne Rocha Milhomem[1]; Clarice Tanaka[1]
Universidade de São Paulo – USP – São Paulo – Brasil

Objective: To verify the prevalence of constipation in women with Bladder Pain Syndrome (BPS) and the impact on quality of life. **Methods:** A cross-sectional study was performed. We included women with BPS and asymptomatic (for comparison purposes), minimum age of 18y. Exclusion criteria were oncologic patients, pelvic radiotherapy, neurological diseases and patients with cognitive deficiency. All participants were assessed by specialized physiotherapists through a medical history data, questions about the presence of constipation, according to ROME III Criteria, validated questionnaire of quality of life (WHOQOL-brief) and a physical examination. **Results:** Fifty-two women were evaluated, mean age 52.7±10.9 y, 26 with BPS (G1) and 26 asymptomatic (G2). We observed that women in G1 group had a statistically significant prevalence of constipation (13/26) compared to G2 (3/26) (p=0.006). The average weekly fecal frequency of G1 was 2.9 times/week, meaning that they had constipation according to ROME III criteria. Related to quality of life, women with BPS seem to be related to physical and emotional changes, generating a negative impact in the overall quality of life. **Conclusion:** We observed that women with Bladder Pain Syndrome showed a statistically significant prevalence of constipation compared to asymptomatic women. Studies are needed to justify our findings. **Keywords**: Physical Therapy; Constipation; Prevalence; Bladder Pain Syndrome; Pelvic Pain; Quality of Life.

FISIOTERAPIA PÉLVICA E SAÚDE DA MULHER

Physiotherapy in sexual dysfunction in the puerperium: Review of the literature

Giovana Tereza Mansur Silva[1]; Tamires Fernanda Dias Freitas[1]; Claudia de Oliveira[2]; Patrícia Andrade Batista[3]; Rossana Pulcineli Vieira Francisco[4]; Clarice Tanaka[5]
[1]Pós-Graduandas em Fisioterapia em Obstetrícia, Hospital das Clínicas HCFMUSP, Faculdade de Medicina da Universidade de São Paulo (USP), São Paulo, Brasil; [2]Docente do Departamento de Fisioterapia, Universidade Santa Cecília, Santos, São Paulo, Brasil; [3]Docente do Departamento de Fisioterapia, Universidade Ibirapuera, São Paulo, São Paulo, Brasil; [4]Disciplina de Obstetrícia, Departamento de Obstetrícia e Ginecologia, Faculdade de Medicina FMUSP, Universidade de São Paulo, São Paulo, Brasil; [5]Departamento de Fisioterapia, Fonoaudiologia e Terapia Ocupacional, Faculdade de Medicina da Universidade de São Paulo (USP), São Paulo, Brasil

Objective: To analyze the latest evidences which correlate physiotherapy, postpartum and sexual dysfunction through literature review. Methods: this study is a literature review on databases PEDro, SciELO, Pubmed and Lilacs using terms “physiotherapy”, “postpartum” and “sexual dysfunction” and the Boolean operators AND and OR. The period of search was until May 2019, both in Portuguese and English. **Results:** After the selection, only 7 papers were admitted to the review. Most of them aim to guide the pregnant woman about the risk factors. **Conclusion:** the education about the pelvic floor is fundamental to the prevention and treatment of sexual dysfunctions at postpartum through strengthening exercises, relaxation of the pelvic floor muscles and the use of transcutaneous electrostimulation. Dyspareunia is the main dysfunction during the first 3 months after birth and could be prevented with a prevention program during pregnancy through physiotherapy. **Keywords**: Physiotherapy, Postpartum, Sexual Dysfunction.

FISIOTERAPIA PÉLVICA E SAÚDE DA MULHER

Physical therapy in the management of gestational pelvic pain

Renata Stefânia Olah de Souza[1], Bianca Mesquita de Moraes[1], Claudia de Oliveira[2], Patricia Andrade Batista[3], Rossana Pulcineli Vieira Francisco[4], Clarice Tanaka[5]
[1]Fisioterapeuta, especialista em Fisioterapia em Obstetrícia pela Universidade de São Paulo (USP) – São Paulo (SP), Brasil; [2]Fisioterapeuta, professora do curso de Pós Graduação em Fisioterapia em Obstetrícia da Universidade de São Paulo (USP) – São Paulo (SP); [3]Fisioterapeuta, mestranda pela Universidade de São Paulo (USP) – São Paulo (SP) e professora do curso de Pós Graduação em Fisioterapia em Obstetrícia da Universidade de São Paulo (USP); [4]Médica, professora associada da Disciplina de Obstetrícia da Faculdade de Medicina da Universidade de São Paulo, Chefe da Divisão de Obstetrícia e Ginecologia do Hospital Universitário da USP, Chefe do Departamento de Obstetrícia e Ginecologia da Faculdade de Medicina da USP e Presidente da Comissão de Pesquisa da Faculdade de Medicina da USP; [5]Fisioterapeuta e coordenadora do Departamento de Fisioterapia do Instituto Central da Universidade de São Paulo (USP)

Objective: Gestational pelvic pain (GPP) is a pain felt between the posterior iliac, gluteal and sacroiliac ridges and may also radiate to the posterior region of the thigh and occur along with pain in the pubic symphysis. It is estimated that 50% of women experience GPP during pregnancy, 33% experience it with low back pain, and 30% of women continue to experience pelvic pain in the postpartum period. By limiting the daily activities of women, GPP is a condition that deserves control and treatment. It is necessary to verify, among the physiotherapeutic options currently available, which have better indication and evidence in the control and treatment of DPG. **Methods:** We searched for articles published in the last 11 years, in the databases PEDro, PubMed and SciELO. After selection, 5 articles entered this review. **Results:** The resources used in the management of GPP in selected articles were: muscular energy technique, TENS, aquatic exercises, soil exercises, sacroiliac mobilization, foot manipulation, and craniosacral therapy. **Conclusion:** Although there is some evidence on the treatment of GPP, it is necessary to deepen the research on more effective physiotherapeutic approaches. Further studies on the treatment of GPP isolated from the treatment of gestational low back pain are also needed, since many women present only the GPP, with no lumbar involvement. Descriptors: 1. Pregnancy; 2. Pelvic pain; 3. Pelvic girdle pain; 4. Physiotherapy; and 5. Physical therapy Modalities.

FISIOTERAPIA PÉLVICA E SAÚDE DA MULHER

Physiotherapeutic interventions for the pelvic floor muscles in preparation for childbirth: Review of the literature.

Cláudia de Oliveira[1], Eunice Graziele de Souza Lima[2], Driele Damasceno Pisco[2], Patricia Andrade Batista[3], Rossana Pulcineli Vieira Francisco[4], Clarice Tanaka[4]

[1]Docente Departamento de Fisioterapia, Universidade Santa Cecília, Santos, São Paulo, Brasil; [2]Pós-Graduadas em Fisioterapia em Obstetrícia, Hospital das Clínicas HCFMUSP, Faculdade de Medicina, Universidade de São Paulo, SP, BR; [3]Docente Departamento de Fisioterapia, Universidade Ibirapuera, São Paulo, BR; [4]Hospital das Clínicas HCFMUSP, Faculdade de Medicina, Universidade de São Paulo, SP, BR.

Objective: To verify which are the physiotherapeutic interventions in the pelvic floor during pregnancy and on the preparation to delivery. **Methods:** A bibliographic review was performed in the databases: Pubmed, Scielo and Pedro. 10 relevant published articles were selected between 1997 and 2019. **Results:** The studies about perineal massage showed that there was reduction in episiotomy, less perineal pain and laceration. For the kinesiotherapy, there was a significant increase of muscle pressure, lower rate of episiotomy lowered time at the second phase of labor. Epi-no® showed significant increase of intact perineum and lower rates of episiotomy when performed by the physiotherapist. **Conclusion:** Studies show that supervised training of the pelvic musculature floor and perineal massage are effective to prepare for the childbirth. Epi-no® training in pre-delivery has shown effectiveness to reduce laceration and intrapartum episiotomy; however, more samples are required to determine the real efficacy. **Keywords:** physiotherapy, perineal massage, pelvic floor, pregnancy.

DISFUNÇÕES MUSCULOESQUELÉTICAS, ESPORTE E ATIVIDADE FÍSICA

Correlation of posture and equilibrium changes in high performance runners of circular track atheletes

Ayla Sakamoto Silva[1]; Igor Dal ColTormar[1]; Jonathan Leite Santos[1]; Marina Silva Batista[1],Milena Missa Kawai[1] e Márcia Midori Morimoto[1]

[1]Graduação em fisioterapia na Universidade Municipal de São Caetano do Sul – USCS; [2]Docente na Universidade Municipal de São Caetano do Sul

Objective: This paper verifies the correlation between the capability of perception of vertical alignment and its influence on postural disorders and balance of long distance runners of circular track. **Methods:** Six long distance racers who run on circular track were tested; as inclusion criteria only were considered high performance athletes who run on tracks from 800 to 15000 meters, both male and female between 18 and 35 years old who have at least one and a half year of sports practice. Athletes who have recently been injured, who practice in a different track or the ones who haven't practiced for the previous three months were not considered. The posture alignment assessments were done through usage of biophotogrammetry with the software SAPO, the balance test, through BESTest and the vertical alignment perception through subjective visual vertical (SVV) using the light stick method. **Results:** Five out of the six athletes showed divergence from SVV default values required for their ages both left and right sides; however, female athletes showed higher divergence when compared to the male. All of the athletes showed 4.6±1.9° of divergence in their horizontal head alignment, which indicates right side tilt. Concerning their center of gravity, it was possible to verify in all of them an anterior displacement to the right and, when evaluated by BESTest, they showed a performance of 86.2±5.5% out of its total, with biggest harm on section four (Reactive), followed by section one (biomechanical restriction). Bringing all the tests together (SVV, SAPO e BESTest) it is possible to notice that the higher divergence in SVV (either side), the higher change in the HCM (p-value<0.05); and the higher changes in CM, either horizontal or vertical, the more damage in the compensatory adjustment (p-value<0.05), evaluated on section four (BESTest). **Conclusion:** The results show that all these relations must be considered and studied in a higher number of people, as well as its importance in the search for predictive injury factors in this sport. **Keywords:** Runners; Postural changes; Balance; VVS; Vestibular adaptation.

DISFUNÇÕES MUSCULOESQUELÉTICAS, ESPORTE E ATIVIDADE FÍSICA

Health costs and low back pain among patients from the Unified Health System

Pedro Victor Tonicante da Silva[1]; Éverton Alex Carvalho Zanuto[2]; Debora Didone Senedez[1]; Myllena Lemes Scardino Vieira[1]; Tamires Mota Toni[1]; Rômulo Araújo Fernandes[3]

[1]Universidade do Oeste Paulista (UNOESTE). Faculdade de Fisioterapia. Presidente Prudente/SP – Brasil; [2]Universidade do Oeste Paulista (UNOESTE). Faculdade de Educação Física e Fisioterapia. Presidente Prudente/SP – Brasil; [3]Universidade Estadual Paulista (UNESP). Programa de Pós-Graduação em Ciência da Motricidade; Instituto de Biociências. Rio Claro/SP – Brasil

Objective: To analyze the costs of chronic low back pain in the Unified Health System, its behavior and associated factors among adults. **Methods:** A longitudinal study of 12 months in two basic health units of Presidente Prudente - SP was carried out. 327 patients were interviewed and evaluated at three times (*baseline* with retrospective characteristics in the last 12 months, after 6 months and after 12 months). The Nordic questionnaire was used to classify chronic low back pain, costs were computed by checking the demand of the services recorded in the medical records. Body mass index (in kg/m²) was calculated using body mass and height values, both of which were collected at the time of the interview. Through a questionnaire, possible confounding variables such as sex, age, ethnicity and socioeconomic status were verified. **Results:** Of those evaluated, 229 were female and 179 were overweight and/or obese. The chronic low back pain was independently associated with costs for consultations (OR = 1.918 [1.055-3.486]), total cost (2.146 [1.168 – 3.943]) and health retirement (OR = 2.900 [IC 95%= 1.589 – 5.295]). **Conclusion:** This study demonstrated that Unified Health System patients with chronic low back pain have increased health costs, as well as association with health retirement, thus burdening public safes. **Keywords**: adult, public health, low back pain, health spending, cost control, exercise.

DISFUNÇÕES MUSCULOESQUELÉTICAS, ESPORTE E ATIVIDADE FÍSICA

Association between sleep quality and lifestyle habits of college students

Henrique Izaias Marcelo[2]; Rafael Pereira da Silva[2]; Éverton Alex Carvalho Zanuto[2]; Monique Yndawe Castanho Araujo[2]; Rômulo Araújo Fernandes[1]; Jamile Sanches Codogno[1]

[1]Universidade Estadual Paulista (UNESP). Programa de Pós-Graduação em Ciências da Motricidade. Instituto de Biociências. Rio Claro/SP- Brasil; [2]Universidade do Oeste Paulista (UNOESTE). Departamento de Educação Física. Presidente Prudente/SP – Brasil

Objective: verify the quality of sleep as well as the determinants of this outcome in college students from a private university in the countryside of the state of São Paulo. **Methods:** The sample consisted of 303 students. The quality of sleep was assessed by questionnaire, and associated with the variables: practice of physical activity in the field physical activity during leisure time; practice of previous sports activities; sedentary behavior; body mass index; alcohol and smoking; and labor activity. **Results:** We found a significant association between poor quality of sleep and the variables: body mass index (p = 0.001), labor activity (p-value = 0.030), alcohol use (p-value = 0.001) and smoking (p = 0.005). However, labor activity was presented as a protective factor for poor quality of sleep (OR = 0.66 [0.40-0.98]), regardless of other factors. **Conclusion:** It is concluded that college students present a high prevalence of altered sleep, having as determinants of this outcome the consumption of alcohol, tobacco, overweight and obesity, on the other hand, labor activity was shown to be a protective factor for poor sleep quality. **Descriptors:** sleep, physical activity, quality of life, good sleep habits, mental health, sleep deprivation.

DISFUNÇÕES MUSCULOESQUELÉTICAS, ESPORTE E ATIVIDADE FÍSICA

Effects of cryotherapy and therapeutic ultrasound as tissue repair materials on muscle injury

Henrique Izaias Marcelo[1]; Tatiana Emy Koike[3]; Thiago Alves Garcia[2]; Guilherme Akio Tamura Ozaki[2]; Robson Chacon Castoldi[1,2]; José Carlos Silva Camargo Filho[3]

[1]Departament of Physical Education, University of West of São Paulo (UNOESTE) - Presidente Prudente/SP – Brazil; [2]Department of Medical Sciences, University of Campinas (Unicamp) – Campinas (SP), Brazil; [3]Department of Physiotherapy, "Julio de Mesquita Filho" São Paulo State University (FCT-UNESP) – Presidente Prudente (SP), Brazil

Objective: The aim of the study was to verify if the combination of cryotherapy and therapeutic ultrasound promote better tissue repair in muscle contusion. **Methods:** The present study was forwarded and approved by the Animal Research Ethics Committee, of the Paulista State University "Julio de Mesquita Filho" – UNESP (CEUA – UNESP 01/2014). Wistar rats (n=55), were divided in five groups, Acute Injury (AI), Injury (I), Cryotherapy (CR), Ultrasonic Therapy (TU) and the Association of CR+TU (CRTU). Morphology, fractal dimension (FD), gene expression of TNF-α and TGF-β1 were measured and significance adopted was $p<0.05$ for all tests. **Results:** FD was significant lower ($p<0.05$), in CRTU compared to AI, I and CR groups. TNF-α was significant lower in TU, compared to the AI, I and CR; and TGF-β1 was reduced in CR, compared to AI and I; and CRTU, compared to AI. **Discussion:** The association of treatments promoted better repair process compared to the isolated treatments. **Conclusion:** It was concluded that the treatments applied with Therapeutic Ultrasound, Cryotherapy and the association of both were effective in the structural repair of muscle tissue. Moreover, it was evident that the use of the associated treatments (CRTU) helped the repair process, reducing the FD, as well as improving the histological aspects. **Descriptors:** Skeletal muscle, Cryotherapy, Injury, Contusion, Regeneration, Inflammation.

DISFUNÇÕES MUSCULOESQUELÉTICAS, ESPORTE E ATIVIDADE FÍSICA

Effects of the Nintendo Wii Sports Games on pain and muscular fatigue of post-polio syndrome: randomized clinical trial

Beatriz Caruso Soares[1]; Erika Christina Gouveia e Silva[1]; Tatiana Mesquita e Silva[2]; Tatiane Ap de Souza Prado[2]; Jéssica Maria Ribeiro Bacha[1]; José Eduardo Pompeu[1]

[1]Universidade de São Paulo; [2]Clínica de Reabilitação Neurológica e Aquática - RNA

Objective: To analyze the effects of video games Nintendo Wii Sports on pain and muscular fatigue of individuals with PPS. **Methods:** 32 patients diagnosed with PPS were recruited; subjects of both genders were selected, age 40-75 years. The individuals performed 14 training sessions, lasting 50 minutes each, twice a week. Patients were randomly divided into Experimental Group (EG/n=16) and Control Group (CGn=16). The CG patients underwent conventional motor physical therapy exercises. The EG patients performed intervention with four Nintendo Wii Sports games: Tennis, Bowling, Golf, and Boxing. The individuals played each game for 10 minutes. The groups were evaluated before and after the 14 intervention sessions and 30 days after the end of the intervention. The outcome was: muscular fatigue assessed through the Muscle Fatigue Severity Scale; and pain, assessed through the Visual Analog Pain Scale (VAS). Statistical analysis was done using ANOVA for repeated measures and Bayesian ANOVA. **Results:** There were no differences between the groups after the interventions or at the follow-up in any outcomes. Both groups presented improvement in pain and muscular fatigue (Tukey post hoc tests, $P<0.05$). In addition, both groups presented decrease in muscle fatigue and pain, demonstrating that both, the Nintendo Wii Sports games and conventional physical therapy exercises are safe for post-polio patients. **Conclusion:** Conventional physical therapy and the Nintendo Wii Sports games were safe, applicable and provided positive effects on pain and muscular fatigue of post-polio patients, without superiority between the interventions. **Keywords:** Neuromuscular Diseases; Post-Polio Syndrome; Rehabilitation; Virtual Reality; Interactive Videogames; Safety.

DISFUNÇÕES MUSCULOESQUELÉTICAS, ESPORTE E ATIVIDADE FÍSICA

The use of cryotherapy in the treatment of quadriceps muscle arthrogenic inhibition: a literature review

Alexandre Luiz Nascimento Filho[1]; Lucas Andreo[2]

[1]Pós-graduando do curso de Intervenção Fisioterapêutica nas Doenças Neuromusculares na Universidade Federal de São Paulo (UNIFESP), São Paulo, SP, Brasil;
[2]Programa de pós-graduação em Biofotônica Aplicada às Ciências da Saúde – Universidade Nove de Julho (UNINOVE), São Paulo, SP, Brasil

Objective: To perform a review of the literature on the aspects of cryotherapy in the treatment with AMI of quadriceps femoral muscle. **Methods:** The following databases were used: MEDLINE, BIREME and SCIELO. The terms used were: neural inhibition, arthrogenic muscle inhibition, quadriceps, knee, cryotherapy and rehabilitation. **Results:** We found 116 articles and, after the application of inclusion and exclusion criteria, 6 controlled clinical trials with cryotherapy, AMI and the H reflex were selected. The isokinetic dynamometer, electromyography and visual analogue scale were used as criteria for measurement. Only one study used nerve electrostimulation as an alternative therapy to compare with cryotherapy. It is a consensus among the studies judged that cryotherapy is capable of generating stimulation in the quadriceps motoneurons and consequently modulates the activation of the H reflex. The results in a set of positive results do not have quadriceps torque peak and a significant increase of the force in isometric extension. The articles emphasized the importance of cryotherapy with volitional exercise to increase structural strength. However, the literature presents incongruous results on the use of cryotherapy in voluntary motor activity**. Conclusion:** The AMI is a reflex response that aims to protect the quadriceps muscle from suffering new injuries and delaying the rehabilitation process. However, cryotherapy is an effective and superior form of application because it has an adequate set of neuron units and, in turn, contributes to the elevation of the reflex amplitude, makes recruitment of motor units and improves the extension force of the quadriceps. **Keywords:** Neural Inhibition, Arthrogenic Muscle Inhibition, Knee, Cryotherapy, Rehabilitation.

DISFUNÇÕES MUSCULOESQUELÉTICAS, ESPORTE E ATIVIDADE FÍSICA

Effects of LED photobiomodulation on the reduction of muscle fatigue after intense exercise - systematic review

Bruno Nascimento de Almeida[1]; Emílio Felipe Machado Alvarenga[1]

[1]Centro Universitário São Camilo, São Paulo, 2019.

Objective: This study aimed to determine through literature review the use of LED to reduce muscle fatigue in athletes after intense physical activity. **Methodology**: A bibliographic survey of clinical trials published from 2009 to 2019 was carried out in the databases PEDro, Lilacs, Medline, Scielo. PubMed, from November 2018 to March 2019, using the keywords “Light Emitting Diode”, “Athletic Performance” and “Muscle Fatigue”, using the Boolean operator AND, with no language restrictions. The PEDro scale was used for the qualitative evaluation of the studies. The articles that were included addressed the themes: intense physical activity, Light Emitting Diode (LED) and improved performance. The studies were selected according to the following inclusion criteria: Clinical trials, clarity in the intervention protocol. **Results:** A total of 28 articles were found, after critical reading of the titles and abstract, 6 articles were excluded for duplication in the databases, 1 did not satisfy the theme, the remaining 21 articles were selected to be read in full, and 12 addressed the use of LED therapy to reduce muscle fatigue after intense physical activity and 6 compared LED use with laser therapy, which obtained better results. **Conclusion:** LED phototherapy showed that applications made before physical activities reduced the levels of metabolites that induce muscle fatigue, improving performance in the activities performed. There is a need for further studies of LED phototherapy in the musculoskeletal system with an emphasis on improving performance by reducing muscle fatigue. **Keywords**: Muscular fatigue, Low-Level Ligth Therapy, athletic performance.

DISFUNÇÕES MUSCULOESQUELÉTICAS, ESPORTE E ATIVIDADE FÍSICA

Use of thermography for diagnosis of muscle fatigue – systematic review

Bruno Nascimento de Almeida[1]; Thaís Fernanda Pires Brandão[1]; Emílio Felipe Machado Alvarenga[1]

[1]Centro Universitário São Camilo, São Paulo, 2019.

Objective: To verify, by literature review and qualitative analysis, the use of thermography as a non-invasive diagnostic method for muscular fatigue. **Methodology:** A bibliographic survey was carried out for clinical trials published from 2009 to 2019, on the databases PEDro, Lilacs, Medline, Scielo, and on PubMed between November 2018 and March 2019, using the words “Thermography”, “Diagnosis”, “Muscle Fatigue”, using the Boolean operator AND, with no restrictions to languages. PEDro scale was used for qualitative evaluation. The articles accepted included the following topics: diagnosis of muscular fatigue, thermoregulatory adaptation system during exercise. **Results:** 7 articles found; after critical reading of titles and abstract, 2 articles were excluded by duplicate on database. The 5 remaining articles were selected to reading, addressing thermography as a non-invasive diagnostic method for muscle fatigue, which could be an alternative method and indicator of global muscular injury situations. **Conclusion:** Thermography as a non-invasive diagnostic method seems promising, but needs further studies with a more rigorous methodology. **Keywords:** Thermography, muscle fatigue, diagnosis.

NEUROCIÊNCIAS E NEUROMODULAÇÃO

Effect of Botulinum Toxin type A associated with physical therapy on the functional capacity of children with spastic cerebral palsy: A randomized controlled clinical trial

Autores: Maria Eliege de Souza - MSc[1]; Claudia Santos Oliveira- PhD[2]; Maria Fernanda Molledo Secco; MSc[2]; Paulo Fonseca Junior-MSc[1]; Daniela Aparecida Biasotto-Gonzalez -PhD[1]; Fabiano Politti - PhD[1]

[1]Universidade Nove de Julho, Programa de Pós Graduação em Ciências da Reabilitação, São Paulo, Brazil; [2]Conjunto Hospitalar de Sorocaba, Sorocaba, São Paulo, Brazil

Objective: The aim of this study was to investigate the effects of botulinum toxin type A (BoNT-A) associated with physical therapy on the functional capacity of children with spastic cerebral palsy (CP). **Material and methods**: Twenty-four children with spastic CP were concealed and randomly assigned to the Experimental Group (EG) consisting of 12 patients (mean age 7.83±2.07 years) treated with BoNT-A and physical therapy and Control with 12 patients (mean age 8.50±2.17 years) treated only with physical therapy. All participants were assessed through motor and functional scales (GMFM-88, Ashworth, Berg Balance Scale, TUG test and Pediatric Evaluation of Disability Inventory) at three different times: before and after 30 days of treatment, and 3 months after the end of treatment. **Results**: The values of the data obtained in EG were significantly different ($p<0.05$) after 30 days of treatment for BERG, TUG test, Ashworth and Pediatric Evaluation of Disability Inventory and after 3 months for BERG, TUG test and Pediatric Evaluation of Disability Inventory. No significant results ($p>0.05$) were found regarding Control. **Conclusion**: The use of botulinum toxin type A (BoNT-A) associated with physical therapy as a form of treatment for children with spastic cerebral palsy provides a significant improvement in the spasticity and functionality of these patients within a period of three months after the start of treatment. K**eywords**: Cerebral Palsy, Functionality, Physical Therapy, Botulinum Toxin type A.

NEUROCIÊNCIAS E NEUROMODULAÇÃO

Transcranian direct current stimulation associated with functional rehabilitation in dementia: case study

Paula Lagos de Oliveira[1]; Larissa Andrade de Oliveira[1]; Julia Bosselmann Rulli[1]; Lucas Macedo[1]; Lilian Andrades[1]; Juliana Goulardins[1,2]

[1]Divisão de Fisioterapia do Instituto Central do Hospital das Clínicas da Faculdade de Medicina da Universidade de São Paulo; [2]Universidade Nove de Julho.

Objective: To analyze the effects of a motor activity program associated with Transcranian Direct Current Stimulation (TDCS) on functionality in dementia. **Methods:** Case study of a 91-year-old female patient with moderate to severe Alzheimer's dementia. The functionality was evaluated before and immediately after the intervention, through the instruments: Functional Independence Measure (FIM), functional scope, anticipatory adjustment and unipodal support. For the intervention, a program of motor activities and TDCS was carried out; the program of activities was composed of aerobic exercise on cycle ergometer and active exercises that consisted of activating the central stabilizing muscles; as for the TDCS the anodic application was in the region of primary and cathodic motor cortex in the supraorbital region, for 20 minutes with 2mA, once a day, for 10 consecutive days, except on weekends. **Results:** There was an improvement from 63 points to 89 points in the FIM. The most significant changes were in the gait and transfer domains, but there were no significant changes in the other tests. **Conclusion:** The TDCS associated with an exercise program improved the functionality of a moderately to severely elderly woman with Alzheimer's disease. **Keywords:** Dementia, Alzheimer´s Disease, Elderly, Transcranial direct current stimulation, Exercise, Rehabilitation.

NEUROCIÊNCIAS E NEUROMODULAÇÃO

Effects of transcranial magnetic stimulation associated with cognitive and motor stimulation in dementia: a case study

Maristela Chaya Tikhomiroff[1]; Lilian Andrades[1]; Lucas de Macedo dos Santos; Melissa Pinheiro Heringer[1]; Paloma Valentim[1]; Juliana Goulardins[1]

[1]Division of Physiotherapy, Central Institute, Clinical Hospital, Faculty of Medicine, University of São Paulo, São Paulo, Brazil

Objective: To describe the effects of transcranial magnetic stimulation (TMS) on the motor and cognitive performance in dementia. **Methods:** An exploratory case study with a 90-year-old female subject with moderate dementia stage of Alzheimer's disease. The intervention was performed with the association of repetitive TMS in the left lateral dorsal prefrontal cortex, concomitant with cognitive stimulus with memory play and, immediately after, the accomplishment of 10 minutes of cycloergometer. This protocol was performed once a day, five consecutive days a week, for 2 weeks, totaling 10 sessions. There was maintenance once a week for 4 weeks. Pre- and post-intervention and post-maintenance evaluations were performed through the following instruments: functional reach test, anticipatory adjustment, unipodal support, Montreal Cognitive Assessment (MoCa), and Brief Cognitive Battery. **Results:** Through this protocol, TMS provided beneficial effects in relation to cognitive and motor functions in this patient with dementia. The descriptive analysis revealed with the instrument functional reach test an increase in the distance reached, being 0 cm in the pre intervention and 11 cm in the post intervention. With the Brief Cognitive Battery instrument, there was an increase in the score from 17 to 22 points. **Conclusion:** The use of repetitive TMS associated with cognitive stimulation followed by aerobic exercise improved the functionality of an elderly woman with moderate dementia. Thus, it is suggested that this intervention model can be a safe and effective alternative in the treatment of this condition. **Keywords**: Dementia. Elderly. Transcranial Magnetic Stimulation. Cognitive Dysfunction. Exercise. Memory.

NEUROCIÊNCIAS E NEUROMODULAÇÃO

Navigated transcranial magnetic stimulation using webcam tracking with the InVesalius Navigator software

Renan Hiroshi Matsuda[1]; Victor Hugo Souza[2]; Oswaldo Baffa[1]

[1]Department of Physics, School of Philosophy, Science and Literature of Ribeirão Preto, University of São Paulo, Ribeirão Preto, Brazil; [2]Department of Neuroscience and Biomedical Engineering, Aalto University School of Science, Espoo, Finland

Objective: The use of neuronavigation systems combined with transcranial magnetic stimulation (TMS) increases the precision, accuracy, and reproducibility in the clinical and research environments. However, high-cost, low portability of navigation systems, and TMS spatial accuracy in targeting brain structures limit their applications. To overcome such limitations, we developeded the open-source, free software InVesalius Navigator for navigated TMS (https://www.cti.gov.br/en/invesalius). In this study, we developed the first webcam-based tracking device for navigated TMS capable of tracking the patient's head through algorithms of pattern recognition and computational vision. **Methods:** A point-based co-registration algorithm and a guiding interface were designed for tracking any TMS coil relative to an individual's anatomy. The webcam-based spatial-tracker development was divided into three parts, the first one is the video processing and communication with the camera, the second part is a cascade regression tree algorithm to predict the face shape changes in each frame and the last part is the head pose estimation. Location, precision errors, and repeatability were measured for the spatial trackers Patriot (Polhemus Inc.) and MicronTracker Sx60 (ClaroNav Inc.). Additionally, errors were measured in the commercial navigated TMS systems NBS 3.2 and 4.3 (Nexstim Plc.). **Results:** The InVesalius Navigator provides an online TMS coil tracking in a user-friendly interface. The location error during navigation was about 1.5 mm, and repeatability of about 1 mm for translation and 1º for rotation angles. Our results are within limits established in the literature and similar to those achieved with the commercial systems. The webcam-based spatial tracker was capable of estimating the position of the head in real time without any sensor or marker attached to the patient's head. **Conclusion:** The developed software provides a flexible platform aiming to fulfill the needs of research requirements, expanding the use of navigated TMS throughout the community. Moreover, the webcam-based spatial tracker allows navigated TMS system to be widely used due to the low-cost, absence of head marker and easy implementation. **Descriptors**: Transcranial Magnetic Stimulation; Neuronavigation; Neurosciences;

NEUROCIÊNCIAS E NEUROMODULAÇÃO

Chronic Low Back Pain Subjects with and without sick-leave have different brain response to acute pain and task of attention

Aloma A Feitosa[1]; Eduardo Ferreira Borba[1]; Edson Amaro Junior[2]; Ari Stiel Radu Halpern[1 2]

[1]Rheumatology Division, Hospital das Clínicas HCFMUSP, Faculdade de Medicina, Universidade de São Paulo, São Paulo, SP, BR; [2]Instituto do Cérebro, Hospital Israelita Albert Einstein, São Paulo, SP, BR

Objective: The objective of this cross-sectional observational study is to compare neuronal correlates between CLBP with or without sick leave. **Method:** A total of 74 individuals was split into three groups: chronic low back pain with sick leave [CLBP_L]; chronic low back pain without sick leave [CLBP_NL]; individuals without pain or sick leave [Control]. Functional magnetic resonance imaging was used to assess brain function during two tasks: moderate acute pain stimulation (thumb controlled pressure) and attention/inhibition (the Word-Color Stroop test). **Results:** After acute painful stimulation, an increased brain response in the anterior cingulate and superior and medium frontal gyrus was observed in CLBP_NL vs. CLBP_L ($p<0.001$) and increased brain response in the frontal pole and paracingulate region in control vs. CLBP_L ($p<0.001$) during acute pain stimulation. In the Stroop task we observed increased brain response in the superior and middle frontal gyrus and frontal pole in CLBP_NL vs. CLBP_L ($p=0.047$). **Conclusion:** Our results confirm previous studies showing that chronic pain is associated with an alteration in neuronal network related to brain areas processing acute pain and we have also extend this result showing finding beyond somatosensory regions to include areas processing attention and inhibition in an executive function task.
Keywords: Ordinary Musculoskeletal Disease, Low Back Disorders, Functional Neuroimaging, Neuronal Plasticity

NEUROCIÊNCIAS E NEUROMODULAÇÃO

Neuromodulation on post stroke sensory motor recovery – Is the protocol dependent on the motor impairment level?

Adriana Baltar[1]; Marina Berenguer[1]; Amanda Bezerra[1]; Andressa Romeiro[1]; Hamably Lima[1]; Kátia Monte-Silva[1]

[1]Laboratório de Neurociência Aplicada – Universidade Federal de Pernambuco/ Recife – PE, Brasil

Objective: To investigate if the sensory motor recovery of paretic upper limb in post stroke patients with moderate motor impairment is dependent on *transcranial direct current stimulation* (tDCS) protocol. **Methods:** This randomized, double-blind, sham-controlled clinical trial, included twenty seven post stroke patients with moderate motor impairment evaluated by Fugl Meyer Assessment - upper extremity section (FMA-UE). The patients were randomized into one of three groups: anodal tDCS (lesioned hemisphere, n=9); cathodal tDCS (non-lesioned hemisphere, n=9), and sham tDCS (n=9). tDCS (20 min and 2 mA) were applied over primary motor cortex (C3 ou C4 according 10x20 system). After tDCS, the patients of all groups attended to physical therapy session (45min). Ten sessions (5x per week) were performed. The functional recovery was measured by FMA-UE and was performed before and after the 10 sessions. **Results**: Repeated measures ANOVA (2times x 3groups) revealed significant difference only for time, no significance was demonstrated for group and interaction. The post hoc analysis with paired t-test revealed difference for three groups comparing before and after 10 sessions. In addition, the analysis of Cohen´s d effect size demonstrated a larger effect size (>0.8) only for anodal tDCS (d=1.0). **Conclusion:** Our results suggest that the motor

impairment could influence the tDCS response of post stroke patients. According to the effect size, anodal tDCS seems to be a better post stroke protocol option for patients with moderate motor impairment. **Keywords**: Stroke; Eletrical Stimulation; Upper Limb; Rehabilitation.

NEUROCIÊNCIAS E NEUROMODULAÇÃO

Epidemiological profile of patients treated at the Neuromodulation clinic of a tertiary hospital

Fernanda Gangella dos Santos[1]; Aloma SA Feitosa; Diego Dini[1]z; Thabata Carvalho de Estácio[1]; Juliana Goulardins[1]; Clarice Tanaka[2]

[1]Ambulatório de Neuromodulação de Fisioterapia - Instituto Central do Hospital das Clínicas – São Paulo - Brasil; [2]Hospital das Clínicas HCFMUSP, Faculdade de Medicina, Universidade de São Paulo, São Paulo - Brasil

Objective: To verify the clinical and demographic characteristics of the patients treated in the year of implantation of a neuromodulation clinic in a physiotherapy service in a tertiary hospital. **Methods:** A retrospective observational study was performed by analyzing the charts of patients seen at the Neuromodulation Outpatient Clinic of the Physiotherapy Division of the Central Institute of the Faculty of Medicine of the University of São Paulo in 2018. The following variables were analyzed: age, sex, technique used (direct or magnetic continuous current transcranial stimulation and diagnoses related to musculoskeletal and neurofunctional disorders). **Results:** Fifty-one patients were evaluated, six of whom were treated with conventional physiotherapeutic techniques because they presented exclusion criteria for transcranial stimulation. Of the 45 patients treated with noninvasive neuromodulation, 64.4% were female, in the age group of 18 to 59 years and 71% with neurofunctional disorders. Regarding the techniques, direct current transcranial stimulation was applied in 60% of cases, of which 83% had musculoskeletal disorders. **Conclusion:** The analysis of the characteristics of the patients showed a prevalence of women and neurofunctional disorders. In addition, direct current transcranial stimulation was the preferred technique in the treatment of musculoskeletal disorders. The knowledge of the characteristics of the patients treated with noninvasive neuromodulation is fundamental for the therapeutic planning and analysis of the costs of implantation in the public health service, besides allowing to advance in the quality and the safety of these techniques. **Keywords**: Neuromodulation; Physiotherapy; Public Hospital

NEUROCIÊNCIAS E NEUROMODULAÇÃO

Does the electrode placement for recording motor evoked potentials matter? A pilot study

Marco Antonio Cavalcanti Garcia[1,2,3,*]; Jordânia Lindolfo Almas[1]; Victor Hugo Souza[3,4]; Renan Hiroshi Matsuda[3]; Anaelli Aparecida Nogueira-Campos[2]

[1]Programa de Pós-Graduação em Ciências da Reabilitação e Desempenho Físico-Funcional, Faculdade de Fisioterapia, Universidade Federal de Juiz de Fora, Juiz de Fora, MG, Brazil; [2]Laboratório de Neurofisiologia Cognitiva (LabNeuro), Departamento de Fisiologia, Instituto de Ciências Biológicas, Universidade Federal de Juiz de Fora, Juiz de Fora, MG, Brasil; [3]Departamento de Física, Faculdade de Filosofia, Ciências e Letras de Ribeirão Preto, Universidade de São Paulo, Ribeirão Preto, SP, Brazil; [4]Department of Neuroscience and Biomedical Engineering, Aalto University School of Science, Espoo, Finland

Objective: Motor evoked potential (MEP) elicited by transcranial magnetic stimulation (TMS) can be recorded using surface electromyography. Parameters such as peak-to-peak amplitude and latency are commonly used for investigating motor system physiology. However, it is observed that there is no consensus in the literature regarding the protocol of electrode positioning for this proposal, which may interfere in the variability of the measurement and, therefore, in the clinical evaluation. Thus, this study (CAEE: 01158218.0.0000.5147) aimed to investigate the variability of MEPs obtained from three different recommendations of electrodes positioning. **Methods:** Seven right-handed subjects (5 males; 25-49 years old) participated in this study. Surface electrodes (Ag-AgCl) were positioned on the *biceps brachii* (BB), *flexor carpi radialis* (FCR) and *flexor pollicis brevis* (FPB) muscles following three different protocols: 1) electrodes on the neuromuscular junction and another on bone prominence (Garcia et al., 2017); 2) electrodes on the muscle belly (SENIAM/ISEK); 3) electrodes on the proximal and distal portions of the muscle (Munneke et al., 2018). MEPs were recorded from 2-3 protocols simultaneously for each muscle, which depended on the available space to place surface electrodes. At least 30 TMS pulses (Magstin 2002, *eight* coil) were only applied to the *hotspot* of BB with an intensity of 120% of its resting motor threshold in pseudo-randomized interval of 5–10 seconds. The surface EMG signals (gain: 2000x, sampling frequency: 3.5 kHz / channel) were processed and analyzed using the Signal Hunter software (Souza et al., 2015, MATLAB version 8.1 R2013a). **Results:** Greater MEPs amplitudes were obtained for Protocol 1 in contrast to the other two (1.35 to 3.25 times higher than Protocols 2 and 3). However, Protocol 3 seemed to provide a lower coefficient of variation (30.4%) in comparison with Protocol 1 (52.4%) and Protocol 2 (63.1%). **Conclusion:** The results suggested important differences on MEPs amplitude recordings based on the protocols of electrodes positioning. Thus, it must be taken into account to TMS applications, since these types of recordings may lead to different resting motor thresholds and, therefore, to different intensities of TMS and number of stimulus to obtain robust central tendency measures. **Keywords:** Transcranial magnetic stimulation, Motor evoked potential, Electromyography.

NEUROCIÊNCIAS E NEUROMODULAÇÃO

Effects of tDCS associated with laterality training in a patient with chronic cervicalgia: case study

Celimar R. Turgante[1]; Fernanda Gangella[1]; Lucas de Macedo dos Santos[1]; Juliana B. Goulardins[1,2]; Mariana Sacchi[1]; Clarice Tanaka[1]

[1]Divisão de Fisioterapia do Instituto Central do Hospital das Clínicas da Faculdade de Medicina da Universidade de São Paulo – São Paulo - Brasil; [2]Universidade Nove de Julho, São Paulo, Brasil

Objective: To assess whether there were benefits in the association of transcranial direct current stimulation (tCDS) with a visual and motor stimulus intervention related to laterality training in a patient with chronic cervicalgia. **Methods**: The patient, male, 58-years-old, reported having tendinitis in the Right Upper Extremity around 5 years ago – as well as slight cervical pain – which evolved throughout the years until it became a restricting factor in his life. His chief complaint consisted of: constant pain and vertigo when walking, performing dynamic movements, and ducking down to pick up objects. The following methods were used for pre and post-intervention evaluation: Visual Analog Scale (VAS), Short-Form McGill Pain Index, Brief Pain Inventory (BPI), Short-Form Health Survey (SF-36), Computerized Dynamic Posturography, HAD Scale – anxiety and depression assessment – and Analogue Algometer in the Tibialis Anterior Muscle and in Wrist extensor muscles, both bilaterally. After the initial data was collected, 10 daily sessions of induction were performed with active bipolar tDCS associated with laterality training in the Recognize Hand app, with the patient in sedestation. The protocol involved the anodic assembly in CZ and cathode electrode in FP2, at 2mA, for 20 minutes. **Results:** The patient's most relevant pre and post-intervention scores were, respectively, VAS: 8 and 1; BPI: 56 and 23; Algometer: 20.6 and 12.5 in right Wrist extensor muscles, 31.6 and 18.5 in right Tibialis anterior muscle. Posturography: There were improvements in postural stability, initial location of the center of mass, balance strategies and sensory weighting, with a post-intervention increase in the usage of somatosensory, visual, and vestibular systems for balance. Before intervention, the patient used predominantly the visual system, and there was no usage of the vestibular system. The patient reported an improvement on pain, dynamic balance, and vertigo. **Conclusion**: It was observed that the association of tDCS with laterality training seemed to bring short-term benefits to a patient with chronic cervicalgia. **Keywords:** Neck pain, functional laterality, transcranial direct current stimulation, postural balance, vertigo and visual analog scale.

NEUROCIÊNCIAS E NEUROMODULAÇÃO

Successful application of add-on transcranial direct current stimulation for rehabilitation of balance in cerebellar ataxia: a case report

Mariana Sacchi Mendonça[1]; Carolina de Oliveira Souza[1]; Clarice Tanaka[1]; Juliana Goulardins[1,2]; Katia Monte-Silva[1]

[1]Divisão de Fisioterapia do Instituto Central do Hospital das Clínicas da Faculdade de Medicina da Universidade de São Paulo – São Paulo - Brasil; [2]Universidade Nove de Julho, São Paulo, Brasil

Objective: To evaluate the effects of transcranial direct current (ETCC) stimulation associated with kinesiotherapy in the balance of an individual with Spinocerebellar Ataxia. **Methods:** Baseline assessments of cortical neurophysiology using transcranial magnetic stimulation (TMS) and clinical scale such as Scale for the Assessment and Rating of Ataxia (SARA), ranging from 0 (no ataxia) to 40 (most severe ataxia), Barthel index (functional and mobility scale) ranging from 0 to 100 and Berg Balance Scale (BBS, predictor of fall risk) ranging from 0 to 56, all of them ranged from the worst-best condition, were performed. Hemispherical motor threshold was assessed with TMS in C3. The patient has signed a written informed consent, and a combined treatment of kinesiotherapy and tDCS was performed. **Results:** The patient showed improvements in all the scales, with reduction of SARA from 12 to 8 points, and increment in Barthel index from 90 to 100 points and BBS from 48 to 37. Hemispherical motor threshold was 92% in the left hemisphere and 84% in the right. After the intervention, it was 84% in the left hemisphere and 78% in the right hemisphere. **Conclusion:** This report illustrates potential benefits of anodal tDCS over the cerebellum combined with kinesiotherapy in a 34-year-old patient with spinocerebellar ataxia. Further controlled studies involving a larger number of patients are required to ascertain the potential benefits of this combined technique to maximize motor rehabilitation in this population. **Keywords:** Cerebellar Ataxia, Transcranial Direct Current Stimulation, Balance, Exercise Therapy, Rehabilitation, Physical Therapy.

NEUROCIÊNCIAS E NEUROMODULAÇÃO

Cortical excitability of quadriceps femoris differs between subjects with knee osteoarthritis and healthy controls

Janine Ribeiro Camatti[1]; Kamyle Villa-Flor de Castro[2]; Cleber Luz Santos[3]; João Zugaib Cavalcanti[4]; Alaí Barbosa Paixão[2]; Abrahão Fontes Baptista[5]

[1]Programa de Pós-Graduação em Neurociência e Cognição, Universidade Federal do ABC; [2]Programa de Pós-Graduação em Medicina e Saúde, Universidade Federal da Bahia; [3]Instituto de Ciências da Saúde, Universidade Federal da Bahia; [4]Núcleo de Estudos em Saúde e Funcionalidade, Universidade Federal da Bahia; [5]Centro de Matemática, Computação e Cognição, Universidade Federal do ABC

Objective: To describe the cortical excitability of the femoral quadriceps of subjects with knee osteoarthritis (OA) and healthy controls. **Methods:** This study included 13 participants (seven OA patients and six controls) recruited from health services in Salvador, Bahia, Brazil. Patients included were over 50 years of age, presented knee pain on most days of the last month, a score on the Chronic Pain Grade equal or greater than II, and medical report confirming knee OA. Healthy controls were paired by sex, age, and body weight. The motor evoked potential (MEP), silent period (SP), intracortical inhibition (ICI) and intracortical facilitation (ICF) of the rectus femoris (RF), vastus medialis (VM) and vastus lateralis (VL) were collected through transcranial magnetic stimulation (TMS). Electromyography (EMG) records were treated offline. MEP amplitudes were expressed in uV and the calculation of ICI and ICF was performed in terms of MEP percentage. Data analysis was performed using Mann-Whitney test for comparing data from knee AO and control groups considering alpha<0.05. **Results:** Participants with knee OA presented reduction in MEP amplitude in the RF (U=-2.286, p<0.05) and VM (U=-2.429, p<0.05) muscles. The intracortical excitability measures showed that ICI was similar between groups and ICF was reduced in the VM (U=-2.571, p<0.01) and VL (U=-2.857, p=0.005) muscles. The OA group had a lower SP mean duration for all muscles when compared with the control group. **Conclusion:** The

cortical excitability of the subjects with OA differs from the controls and this may be due to an imbalance between the portions of the quadriceps. **Keywords:** Cortical Excitability, Motor Evoked Potential, Knee Osteoarthritis, Quadriceps Muscle.

NEUROCIÊNCIAS E NEUROMODULAÇÃO

Brain electroactivity as a predictor of neuromodulatory response in the treatment of chronic pain secondary to TMD

Abrahão Fontes Baptista[1,2]; Tiago da Silva Lopes [2,3]; Juliane Nascimento de Sousa[3]; Fernanda Campbell [4]

[1]Federal University of ABC Paulista, São Paulo, Brazil; [2]Graduate Program in Medicine and Health, Salvador, Brazil; [3]Adventist Laboratory of Neuromodulation and Neurosciences, Cachoeira, Brazil; [4]Brandeis University - The Heller School for Social Policy and Management, Boston, USA

Objective: To investigate whether baseline brain electrical activity is a predictor of therapeutic response to tDCS (30% of pain reduction). **Method:** Ten women with muscular TMD and chronic pain, age 40.2±13.6, participated in a crossover, randomized, double-blind clinical trial. Brain electrical activity was evaluated pre and post tDCS sessions using 29 active electrodes and a Cz reference distributed following the international 10/20 system (BrainNet EEG 36). The recording lasted 4 minutes with a sampling rate of 200Hz, filter notch 60Hz, and impedance below 5kΩ. Electrodes were grouped into five regions: Frontal, Temporal, Parietal, Central, Occipital. Participants were randomized into three groups: A (tDCS 2mA), B (tDCS Sham), and C (tDCS 1mA). The negative pole was placed on the right dorsolateral prefrontal cortex and the positive pole in the contralateral supraorbital region; each stimulation session lasted 20 min. Participants in each group received a single session with a one-week washout period among sessions. Data were analyzed using repeated measures ANOVA. This study was submitted and approved in the Ethics Committee of Maternidade Climério de Oliveira, Federal University of Bahia, process number: 659.0460. **Results:** Baseline theta frequency presented a moderate positive correlation with the reduction of pain after treatment only for group A (R=0.88, p=0.001). However, the ANOVA did not identify pre-post difference for any of the groups. **Conclusion:** A single tDCS session did not result in the decrease of pain intensity by 30% among student participants. Theta power pre-intervention may be a predictor of neuromodulation response to tDCS. Studies with larger sample size are needed to further test this hypothesis. **Keywords:** Neuromodulation; Chronic pain; TMD.

NEUROCIÊNCIAS E NEUROMODULAÇÃO

A multimodal motor skill balance training with rhythmical cues to improve and maintain balance control in Parkinson's disease

Tamine T.C. Capato[1,2]; Nienke M. de Vries[2]; Joanna IntHout[3]; Egberto R. Barbosa[1]; Jorik Nonnekes[4]; Bastiaan R. Bloem[2]

[1]University of São Paulo, Department of Neurology, Movement Disorders Clinic, São Paulo, Brazil; [2]Radboud University Medical Centre, Donders Institute for Brain, Cognition and Behavior, Department of Neurology, Nijmegen, The Netherlands; [3]Radboud University Medical Center, Department for Health Evidence, Radboud Institute for Health Sciences, Nijmegen, The Netherlands; [4]Radboud University Medical Centre; Donders Institute for Brain, Cognition and Behavior; Department of Rehabilitation, Nijmegen, The Netherlands

Objectives: External cues are often applied in Parkinson's Disease (PD) to improve gait, but the of external cueing on balance in PD is unclear. The aim of this study was to verif the effect of Multimodal Balance Training (MBT) with rhythmical auditory cues to improve balance and reduce falls in PD. **Methods:** We performed a Randomized Controlled Trial in patients with PD in H&Y stage I–III. Patients were randomized into one of three groups: (1) MBT with rhythmical auditory cues delivered by a metronome (MBTR); (2) MBT without rhythmical cues (MBT); and (3) no intervention control group (CG). Training was performed at HCFMUSP for 5 weeks, two times a week using a personalized protocol. Our primary outcome was the Mini-Best score. Treatment effects were estimated with a linear mixed model, adjusted for baseline. We used the Falls Efficacy Scale (FES-I) and a weekly falling questionnaire as secondary outcomes. Assessments were performed by a single, blinded assessor at baseline and after 5, 9 and 35 weeks follow-up. **Results:** 133 patients were included, mean age 70y (SD13). Compared to the CG group, at 5 weeks follow-up, both the MBTR and the MBT groups had improved on the Mini-Best (6.7 (SE 0.7), P<0.001; MBT-CG 3.0 (SE 0.7), P<0.001). The MBTR group showed a significantly larger improvement than the MBT group (MBTR-MBT 3.7 (SE 0.6), P<0.001). The improvements were retained at 9 weeks follow-up (MBTR-CG 6.2 (SE 0.7), P<0.001; MBTR-CG 2.0 (SE 0.7), P 0.004). Only the MBTR group maintained its improvement at 35 weeks (MBTR-CG 5.0 (SE 0.7), P<0.001). Less falls and injuries were reported after the study in comparison to baseline by all groups. Moreover, we found no severe injuries in the MBTR group and a reduced fear of falling in the MBTR and MBT groups after 9 weeks. Again, only the MBTR group maintained the results at 35 weeks. The control group showed an increased fear of falling after 5, 9 and 35 weeks. **Conclusion:** Both MBTR and MBT are effective in improving balance and reducing falls. **Keywords:** Parkinson's disease, clinical trial, physical therapy, balance, postural control, cueing.

NEUROCIÊNCIAS E NEUROMODULAÇÃO

Implementation process of the translation and adaptation of European Physiotherapy Guideline for Parkinson's disease to Portuguese: 3 years follow-up

Tamine Capato[1,2]; Josefa Domingos[2]; Lorena Almeida[3]; Samyra Keus[2]; Bastiaan R Bloem[2]

[1]University of São Paulo, Department of Neurology, Movement Disorders Clinic, São Paulo, Brazil; [2]Radboud University Medical Centre, Donders Institute for Brain, Cognition and Behavior, Department of Neurology, Nijmegen, The Netherlands; [3]Hospital Geral Roberto Santos, Bahia, Brazil

Objective: Implementation the Portuguese version of European Physiotherapy Guideline for Parkinson's Disease (EPGPD-PT) to Brazil and Portugal. **Background:** The translation of the EPGPD-PT was published in 2015 to support the judgments and decisions among health professionals made during their clinical practice in Parkinson's Disease. The development of this Guideline used AGREE and GRADE according to recommendations based on evidences. **Methods:** EPGPD-PT was published and is available for free downloading at http://www.parkinsonnet.info/euguideline and http://www.abneuro.org.br. A printed version of EPGPD-PT was distributed to physiotherapists and physicians in congresses and courses of neurology and physical therapy. Additionally, the authors of the translation decided to collect data to identify what were the main aspects of interest in order to further discussion in courses or dissemination events. By using a questionnaire, search was performed among 814 health professionals concerning knowledge and information about the material; level of interest; how to use; university graduation, specialization and post graduate; how many people with Parkinson´s they treated per month; how and where they get information from (journals, books). **Results:** The implementation process began immediately after the translation and adaptation of EPGPD-PT. After 2 years, the EPGPD-PT was presented at many congresses (Brazilian-08; International 10), lectures (15) and meetings (15). From the questionnaires, we obtained 665 replies. These included 266 from physicians, 02 from neurosurgeons, 300 from physiotherapists, 01 from psychologists, 01 from occupational therapists; 25 from medicine students and 70 physiotherapy students. Most of the repliers state they did not know about the guideline (480) and (185) had heard about it but had not used yet. Those that were aware of its existence (27.8%) also added they did not feel they knew how to use it. Furthermore, 72.2% showed an interest in obtaining more information. After 3 years follow-up, the 90% physiotherapists specialized in neurology that trained on the courses based on EGPD-PT, have been using the concepts in clinical practice and related that it is very useful. **Conclusions:** The EPGPD-PT is an important tool to support specialized physicaltherapists during their clinical practice with Parkinson's disease patients. The level of interest about the EGPD-PT is increasing. **Keywords:** Parkinson's disease; Physicaltherapy; Education; guidelines; evidence based.

ENVELHECIMENTO

Assessment of fear of falling and relationship with falls in elderly assisted at a school clinic in São Paulo - SP

Danielle Brancolini de Oliveira[1]; Gabriela Candido Alexandrino de Souza[1]; Taís Di Giovanni Paciência[1]; Janete Maria da Silva[2]

[1]Fisioterapeuta. Centro Universitário São Camilo. São Paulo-SP, Brasil; [2]Fisioterapeuta. Mestre em Ciências da Reabilitação pela Faculdade de Medicina da Universidade de São Paulo. Professora do Centro Universitário São Camilo. São Paulo-SP. Brasil

Objective: Verify the risk and fear of falls among elderly attended at the Centro de Promoção e Reabilitação em Saúde e Integração Social – Promove São Camilo, São Paulo-SP. **Method:** Transversal study approved by Comitê de Ética em Pesquisa from Centro Universitário São Camilo (2.677.187/2018) which enrolled 40 elderly people (72.5% were female) attended by any modality of assistance at the school clinic. All participants agreed to be volunteer in this study. The data collection comprised the application of a questionnaire with demographic data and *Falls Efficacy Scale International* (FES-I). Furthermore, the following tests were applied: *Timed Up and Go* (TUG*), Berg Balance Scale* (BERG*)* and Six Meter Speed Gait Test. Statistical analysis was made on SPSS 20. The statistical significance was found when p<0.05. **Results:** The mean age of the subjects included in this study was 68 years (standard deviation ± 7.63). Thirty five percent (14 individuals) reported, at least, one fall during the six months before the survey, with a mean of 2 falls. The polypharmacy was identified in 57.5% of aged people. The median of FES-I and BERG punctuation were, respectively, 23 (interquartile range: 19.25 – 33.50) and 54 points (interquartile range: 48 - 55). The median time for TUG was 11 seconds (interquartile range: 9.00 – 13.75), while, the mean of six meters speed gait test was 1,20 m/s (standard deviation ± 0.39). Age, TUG, BERG and Six Meters Speed Gait test showed association with FES-I (p<0.05). BERG presented negative and moderate association with FES-I (correlation coefficient: -0.601; p<0.001). Gender, presence of falls, number of falls and polypharmacy were not associated with punctuation of FES-I (p>0.05). **Conclusion:** Despite a satisfactory balance and functional performance, which indicate low risk of fall, the elderly included in this study reported fear of falling. The fear of falling was associated with age, balance, time spent to TUG and gait speed. **Keywords:** Accidental falls; Self efficacy; Postural balance; Elderly people; Walking speed.

ENVELHECIMENTO

Sense of presence and tolerability in two spatial orientation tasks in immersive virtual environment

Michelle Didone dos Santos[1]; Juliana Magalhães Silva[1]; Raquel Quimas Molina da Costa[1]; Emerson Moretto[1]; Sonia Maria Dozzi Brucki[1]; José Eduardo Pompeu[1]

[1]Universidade de São Paulo

Objective: To describe the first results of tolerability and sensation of presence in two immersive tasks of a virtual reality system called Spatial Orientation in Immersive Virtual Environment Test (SOIVET) created to evaluate spatial orientation in elderly people. **Methods:** 20 elderly were invited to participate in the study (mean age 70 years old) to perform a task that evaluates egocentric spatial orientation (SOIVET-M) where the participant performs a route within a labyrinth and a task that is based on visuospatial memory and the recognition of topographic landmarks (SOIVET-R). The tasks were performed with the Oculus Rift® immersive device, which allows to experience a 3D reality with 360º visualization. Tolerability was assessed through a questionnaire to track cybersickness after each task and the feeling of presence through the presence questionnaire of Witmer and Singer. History of sensitivity to motion sickness, labyrinths and familiarity with technology were also collected. **Results:** There were no significant differences in tolerability between the SOIVET-M task (M = 3.65, SD = 6.08) and the SOIVET-R task (M = 2.45, SD = 3.47); t (20) = 1.57, p = 0.132. Cybersickness scores on both tasks seem to be related to prior

labyrinth and / or sensitivity prior to motion sickness. The scores of the presence sensation questionnaire indicated high levels of presence and immersion for both tasks, with a median of 124 and 133 for SOIVET-M and SOIVET-R, respectively. Scores were not influenced by age, sex or familiarity with technology. **Conclusion:** Preliminary data from this study show that both tasks trigger a strong sense of presence and immersion, regardless of the familiarity with the technology, which is crucial for an ecological task. Although both tasks have shown favorable and similar profiles of tolerability and vulnerability, an investigation with a greater number of elderly is necessary for the improvement of the system. In particular, the use of virtual reality with high visual processing capacity such as Oculus Rift® and the tracking of the history of labyrinth disorders and sensitivity to kinetosis seem to be effective strategies in minimizing the adverse effects of cybersickness in this population. **Keywords:** aged, spatial orientation, cognition, virtual reality, biomedical technology, user-computer interface.

ENVELHECIMENTO

Evaluation of the Immersive Rehabilitation System for the motor and cognitive training of the elderly

Beatriz Caruso Soares[1]; Jéssica Maria Ribeiro Bacha[1]; Tatiana da Fonseca Santos[1]; Karina Santos Vieira[1]; Camila Torriani-Pasin[1]; José Eduardo Pompeu[1]

[1]Universidade de São Paulo; [2]Universidade Paulista

Objective: To analyze the applicability, safety, and acceptability of the Immersive Rehabilitation System, an immersive virtual reality, for the motor and cognitive training of the elderly. **Methods:** Eleven young people and ten elderly were recruited. The inclusion criteria were: both sexes, up to 80 years of age, without signs of dementia (MMME > 24) and without depression (GDS < 6). The exclusion criterion was the presence of previous vestibular dysfunctions. The usage of the system was performed with Oculus Rift® synchronized with Kinect Sensor®. To advance in the path of the virtual environment the participants performed stationary gait and, at each stage, they should reach certain objects and avoid others. The applicability of the system was evaluated by the level of contact with previous technology and symptoms. Safety was assessed by the onset of symptoms during the test, such as general discomfort, fatigue, headache, ocular fatigue, hypersialia, sweating, nausea, tachycardia, dizziness, vertigo, mental confusion, and reflux. Acceptability was assessed by participants' opinions about the system. A descriptive analysis of the results was performed by means of mean, standard deviation, confidence interval of 95% and the absolute and relative number of occurrence of adverse events and frequency of questionnaire responses. **Results:** Only one individual in each group had previously had some recent discomfort. All the youngsters had already played video games, while half the elderly had not. Only 30% of the elderly people reached the last phase, compared to 81% of the youngsters. Both young and elderly had symptoms from the use of the system, the most prevalent being: general discomfort, fatigue, sweat, and dizziness, with no significant difference between groups. However, the elderly felt more motivated in relation to the youngsters when testing the system (P = 0.04) and would indicate it to other people more frequently (P = 0.03). **Conclusion:** The system has no applicability and safety, but it has acceptability. The onset of symptoms is probably due to the sensory conflict triggered by the immersive environment and the duration of the test. However, the system's approval rate by the elderly shows the potential fulfillment of the system's objectives through a non-immersive configuration. **Keywords:** Elderly; Virtual reality; Rehabilitation; Cognition; Technology; Safety.

ENVELHECIMENTO

Applicability, safety and acceptability of the immersive system BALLOONS for virtual rehabilitation of elderly fallers

Beatriz Caruso Soares[1]; Jéssica Maria Ribeiro Bacha[1]; Guido Augusto Faria Pereira[1]; Da Hee Chun Kim[1]; Roseli de Deus Lopes[1]; José Eduardo Pompeu[1]

[1] Universidade de São Paulo

Objective: We present an under development immersive exergame with cognitive-motor activities focused on elderly fallers, and its evaluation based on test results with experts. **Methods**: We developed a virtual reality exergame, named Balloons, where a player must make his highest score possible by popping balloons, in less than 5 minutes. To score, the player must select balloons (of two different colors and values, pink which values 1 and green which values 2) and make partial sums of value exactly equal to 10. Each partial sum will result in one additional point in his score. We implemented two different solutions for playing the exergame Balloons using the same Head Mounted Display (HMD) and 2 controllers. In one solution the participant uses a vest attached to an overhead harness for security. In the other solution he uses a virtual reality omnidirectional treadmill (ODT). We applied a mixed-methods survey-based study and collected information from 6 Brazilian physiotherapists, experienced in working with elderly people. **Results:** Results were quite similar with the two solutions we have implemented and tested. **Conclusion:** The results presented indicate positive evaluation by experts in terms of safety, tolerability and acceptability. However, they also indicate the need of some adjustments in the difficulty level (giving the possibility of adjustment by the expert), a lack of exercise intensity and the necessity of adding more cognitive activities and challenges to the game and content. **Keywords:** Virtual reality, Physiotherapy, Rehabilitation, Aged, Cognition, Postural Balance.

ENVELHECIMENTO

Musculoskeletal symptoms associated with fragility in elderly individuals with high and low schooling and income

Thainá Tolosa De Bortolli[1]; Nicole Terni De Mello[1]; Tathiana Luana Gasparotto de Souza[1]; Tayná Moraes de Almeida[1]; Larissa Henrique Ferrari[1]; Letícia Carnaz[2]

[1]Universidade do Sagrado Coração; [2]Universidade Federal de São Carlos

Objective: To verify the association between musculoskeletal symptoms and fragility in elderly individuals with high and low schooling and income. **Methods:** Cross-sectional observational study. The study included 179 elderly individuals, 89 elderly individuals with high schooling and income (GA) and 90 with low schooling and income (GB). The evaluation consisted of identification form, Nordic questionnaire to evaluate the musculoskeletal symptoms and the fragility phenotype proposed by Fried et al. (2001). The fragile and pre-frail elderly were included in the group with fragility, and the non-fragile in the group without fragility. Thus, the groups were subdivided into a group of high schooling without fragility (GASF, n=47) and with fragility (GACF, n=42), low education group without fragility (GBSF, n=18) and with fragility (GBCF, n=72). The research was approved by the Research Ethics Committee, by the opinion 2.318.075/2017. For statistical analysis, Pearson's chi-square test was applied, p<0.05. **Results:** The elderly in GB reported more pain complaints in the last twelve months in the knee (P=0.03) and ankle (P=0.03) regions, as well as a greater impediment to daily activities due to hip pain (P=0.03) and greater pain complaint in the last seven days in the neck regions (P=0.00), upper back (P=0.04) and ankles/feet (P=0.01) than GA. Regarding GBCF and GBSF, no significant differences were identified between the groups, but comparing the elderly of GACF and GASF, it was observed that the fragile reported higher complaints in the last twelve months in the neck (P=0.05), fist/hands (P=0.00) and ankles/feet (P=0.00), with impediments in daily activities in the neck and wrists/hand, with a greater demand of professionals for neck complaints (p=0.02), wrists/hands (P=0.00), lower back (p = 0.01) and ankles/feet (P=0.01), and presenting in the last seven days pain in the wrists/hands (P=0.02), lower back (P=0.00) Hip (P=0.00) and ankles/feet (P=0.00). **Conclusion:** By comparing to GB with GA, it is concluded that the elderly in GB had higher musculoskeletal impairments, but when compared to the frailty state, the elderly from the GACF presented greater impairments than the GASF. For the elderly in GB, there was no association between musculoskeletal symptoms and fragility. **Keywords:** Pain, Referred. Aging. Educational Status. Frail Elderly. Income. Public Health.

ENVELHECIMENTO

Impact of motor cognitive training real versus virtual in the postural control of community dwelling elderly people

Michelle Didone dos Santos[1]; Jéssica Maria Ribeiro Bacha[1]; Eliana Maria Varise[1]; Julia Maria D`Andréa Greve[1]; José Eduardo Pompe[1]

[1]Universidade de São Paulo

Objective: To compare the effects of motor cognitive trainings: real and virtual on the postural control of the elderly and to verify the duration of the effects of the interventions after 30 days of follow-up. **Methods**: Non-randomized and blind clinical trial. Thirty elderly people, divided between real cognitive motor training (RCMT) and virtual cognitive motor training (VCMT), participated in this study. All subjects underwent 14 intervention sessions, twice a week, for seven weeks. The RCMT group performed cognitive-motor training in real environment, composed of four multitasking stations practiced on unstable surfaces (Station 1, Station 2, Station 3 and Station 4). The VCMT group practiced cognitive-motor training in the virtual environment through the interactive video games Kinect Adventures. All participants were submitted to three evaluations: pre-, post- and thirty days after the interventions. Postural control was assessed using the Mini-Balance Evaluation Systems test scale. Statistical analysis was performed using repeated measures ANOVA and post hoc Tukey test to verify possible differences between groups and evaluations. An alpha of 0.05 was adopted. **Results:** In relation to the total score of the MiniBEST, there were significant effects of time and group F=15.885, p=0.0001, power=0.999 and F=57.413, p=0.0001, potency=1,000, respectively. Both groups showed improvement in the post-training and in some outcomes of the Mini-Balance Evaluation Systems with superiority of the VCT. **Conclusion**: The results of this study suggest that both the RCMT and the VCMT improve the postural control of the elderly, with difference between them. Facing these findings, one can conclude that in addition to RCMT through physiotherapy resources, VCMT through interactive Kinect Adventures video games can be a useful and complementary tool to improve postural control in the elderly. **Keywords:** Virtual Reality; Physiotherapy; Rehabilitation; Aged; Cognition; Postural Balance.

ENVELHECIMENTO

Validation of the Functional Cognitive-Motor Test for the elderly

Jéssica Pereira da Cruz[1]; Larissa Alamino Pereira de Viveiro[2]; Eliana Maria Varise[2]; Nelson Carvas Junior[1]; José Eduardo Pompeu[2]; Angela Macedo Salinet[1,2]

[1]Universidade Ibirapuera, Av. Interlagos, 1329. Chácara Flora, São Paulo - SP, 04661-100; [2]Faculdade de Medicina da USP (FMUSP) - Departamento de Fisioterapia, Fonoaudiologia e Terapia Ocupacional, Rua Cipotânea, 51. Cidade Universitária - São Paulo – SP

Objective: To validate the functional cognitive-motor test (FCMT) for the elderly population in order to detect subtle alterations not identified by conventional clinical tests. **Method:** 30 elderly men and women, 20 (67.10%) women and 10 (32.9%) men, aged between 60 and 82 years, were evaluated. Participants were able to remain in the orthostatic position and walk without assistance, without signs of cognitive impairment and with good auditory and visual acuity. Relative reliability, through inter-observer reliability and test-retest,

was analysed by the intraclass correlation coefficient (ICC). The inter-observer reliability was analyzed using the scores obtained by the two evaluators in the first evaluation, and the test-retest reliability was analyzed using the scores of an evaluator in the first and second evaluations. **Results:** Among the 11 evaluated items, ICC values ranged from 0.887 to 1.000 indicating good inter-observer reliability, and test-retest ICC values ranged from -0.036 to 0.719 indicating poor to moderate test-retest reliability. **Conclusion:** Despite good intra-observer reliability, FCMT was not a sensitive instrument to detect silent cognitive-motor changes in elderly subjects. The early detection of functionality deterioration may direct investments in prevention and health promotion of the elderly in the community. **Keywords:** Elderly, Validation, Physical Fitness, Functionality, Postural Control, Gait

ENVELHECIMENTO

Thoracic hyperkyphosis does not influence balance in elderly people

Fabíola J. Gonçalves[1]; Cintia D. Freitas[1]; Igor B. F. Masson[1]; Mayara R. S. Silva[1]; Artur H. A. Oliveira[1]
[1]Universidade Paulista (UNIP), São Paulo, Brasil

Objective: To assess and correlate balance with thoracic hyperkinesia of sedentary elderly. **Methods**: A cross-sectional study including individuals over 60 years old who did not use to practice physical activitites regularly, with thoracic hyperkyphosis over 50º, and were able to keep othostatism and walk independently, without exercises and/or cognitive impairment, pathologies linked to balance deficit or thoracic scoliosis nor usage of sedative or hypnotic drugs. An evaluation form was used to gather personal information. The Flexicurva method was used to assess thoracic kyphosis. Balance was assessed through Berg Balance Scale, Romberg Test and Functional Reach Test. Approved by the ethics Committee of Universidade Paulista, protocol 1958839, March 2017. **Results**: 61 elderly (14 men, 47 women) with average thoracic hyperkyphosis 65.73º±10.58º, mean age 78.03±9.34, mean weight 67.80 kg ±12.82 and mean height 1.58m±0.09. Values obtained in the tests were: Flexicurva (65.73º±10.57), Berg Balance Scale (44.05 points ±7,58), Functional Reach Test (16.29 cm ±6.36) and Romberg Test (89% positive, 11% negative). No correlation between Flexicurva and Berg Balance Scale (r=-0,22, p=0,08); Romberg Test (r=-0,13, p=0,31) and Functional Reach Test (r=-0,08, p=0,52). **Conclusion:** The thoracic hyperkyphosis had no influence on the balance variables for the elderly under study. **Keywords:** Postural Balance; Elderly, Kyphosis; Sedentary Life Style

ENVELHECIMENTO

The influence of dance intervention on quality of life in patients with Parkinson's disease

Marcela Amanda Da Silva Trovo[1]; Márcia Midori Morimoto[2];
[1]Graduanda do Curso de Fisioterapia da Universidade Metodista de São Paulo (UMESP); [2]Mestra em Neurociências e comportamento pela Universidade de São Paulo (USP), docente do curso de Fisioterapia e Psicologia na Universidade Municipal de São Caetano do Sul (USCS)

Objective: to evaluate the effects of dance as a physiotherapeutic intervention, and its repercussions on the quality of life in PD patients through the PDQ-39 questionnaire. **Method:** This is a longitudinal prospective study with a sample of seven participants, with three stages of procedure, divided into initial evaluation, intervention with dance and final evaluation, totaling 16 sessions. **Results:** There was a statistically significant post-intervention improvement in the general quality of life (p value = 0.00), and in the specific aspect of Mobility (p value = 0.02), and the whole sample was benefited, as well as an improvement of the median in six of the eight domains covered in the PDQ-39. **Conclusion:** Dance as a physiotherapeutic intervention had a positive repercussion on the general quality of life of individuals with Parkinson's disease, and on the mobility aspect. **Keywords**: Parkinson's Disease; Quality Of Life; Dance Therapy.

ENVELHECIMENTO

Effect of the division of attention on mobility performance of frail elderly

Michelle Didone dos Santos[1]; Jéssica Maria Ribeiro Bacha[2]; Gisele Cristine Vieira Gomes[3]; Wilson Jacob-Filho[4]; Julia Maria D`Andréa Greve[5]; José Eduardo Pompeu[6]
[1]Mestranda em Ciências pelo Departamento de Fisioterapia, Fonoaudiologia e Terapia Ocupacional da Faculdade de Medicina da Universidade de São Paulo; michelle.didone@hotmail.com; [2]Doutoranda em Ciências pelo Departamento de Fisioterapia, Fonoaudiologia e Terapia Ocupacional da Faculdade de Medicina da Universidade de São Paulo; jessicarbacha@hotmail.com; [3]Mestre em Ciências pelo Departamento de Fisioterapia, Fonoaudiologia e Terapia Ocupacional da Faculdade de Medicina da Universidade de São Paulo; gigicv.gomes@gmail.com; [4]Médico e Professor na Faculdade de Medicina da Universidade de São Paulo; wiljac@usp.br; [5]Médica e Professora na Faculdade de Medicina da Universidade de São Paulo; jgreve@usp.br; [6]Professor do Departamento de Fisioterapia, Fonoaudiologia e Terapia Ocupacional da Faculdade de Medicina da Universidade de São Paulo; j.e.pompeu@usp.br

Objective: To evaluate the effect of the attention division on mobility performance of frail elderly. **Methods:** It is a cross-sectional study. We assessed 30 elderly people, 15 diagnosed with Frail Syndrome according to the Fried criteria, mean age 82.6 (5.6) years, and 15 robust elderly, mean age 70.4 (5.2) years. Inclusion criteria were: absence of any neurological or orthopedic disease that prevented the capacity to maintain the independent orthostatic position; and signing the consent term. Mobility performance was assessed in single and dual task conditions using the Timed Up and Go Test (TUG). Sociodemographic data were collected (gender, marital status, height, weight, number of medications and number of diseases). Statistical analysis was performed using the mixed ANOVA with repeated measures. **Results:** The performance of frail elderly was worse compared to the robust elderly in single and dual task conditions [simple tasks: frail 20.07 (2.39), robust

6.82 (2.39); dual task: frail 26.91 (2.85) robust 9.49 (2.85)]. **Conclusion:** Frail elderly present worse mobility performance in single and dual task conditions when compared to robust elderly. **Keywords:** Aged; Frailty; Mobility Limitation; Physiotherapy, Rehabilitation; Cognition.

ENVELHECIMENTO

Effectiveness of Otago Protocol in older people balance from a day-care centre

Michele Lacerda Pereira Ferrer[1]; Suele Castro[1]; Diovana de Oliveira Gisse[1]; Grazielle Aureliana Fraga de Sousa[1]

[1]Curso de Fisioterapia – Universidade São Francisco

Objective: to analyze the effect of Otago Protocol for the balance of older people when applied in a day-care in the city of Bragança Paulista/SP. **Methods:** Blind randomized clinical trial, approved by the Ethics and Research Committee (n. 1.964.012). An initial assessment in all elderly participants was held with the Functional Independence Measure scale(MIF); Mini Mental State Examination (MMSE); Berg Balance Scale and Timed Up And Go Test (TUGT). After the evaluation, the patients were selected based on the exclusion criteria (visual or auditory impairment, wheelchair user or people whose capacity prevent them from answering or executing the needed activities for evaluation). After a simple randomization process the elderly were subdivided into the control (CG) and intervention (GI) groups. The CG ones walked with the day-care team. The GI ones made the exercises proposed by the Otago Protocol as well as walking. Both activities were performed twice a week for eight weeks. The data were analysed by T-test paired and unpaired. **Results:** After the exercises, it was verified that there was no improvement statistically significant in the balance and mobility between the initial and final evaluation of the GI. Therefore, when comparing CG and GI, it was observed that the CG people presented a worse performance than the CG people in the final evaluation of the tests. **Conclusion:** the Otago Protocol exercises may retard the postural instability progression of weakened elderly people in a day-care center. **Keywords**: Frailty Older, Physiotherapy, Balance, Day-Care, Mobility Impairtment, Exercise.

FISIOTERAPEUTA GESTOR

Implementation of a scale of complexity - dimensioning the physiotherapy team in an intensive care unit

Monique Buttignol[1]; Renata Henn Moura[1]; Carla Spinelli de Santana Lopes Rodrigues[1]; Louise Helena Gonçalves Rodrigues[1]; Daniela Nobrega Pavão[1]

[1]Instituto Israelita de Responsabilidade Social Hospital Municipal da Vila Santa Catarina. São Paulo/ SP

Objective: To investigate the size of a physiotherapy team for an intensive care unit, and to identify the number of physiotherapist professionals required to assist patients according to their level of clinical complexity. **Method:** The brainstorming tool was used with the leadership to elucidate and create a scale of clinical complexity to be applied daily in all patients of the intensive care unit, in order to direct the number of physiotherapeutic appointments that the patient will receive over 24 hours. After the drawing of the scale with the guiding axes in the respiratory frame, through clinical signs, and the motor frame, through the Perme Escore and Medical Research Council scales for muscle strength, test cycles were performed, team training with monthly basis follow-up in a systematized form through indicators of assistance and operational quality. **Results**: After 12 months of implementation of the complexity scale, the improvement in operational efficiency (number of visits/number of professionals) was observed, from 58% to 92%, as well as improvement in the quality of care measured through a checklist from 92% to 97%. In addition, the number of visits per day guided by this scale did not affect the mobilization of this patient during his stay in the ICU (Perme Escore on day 1 of hospitalization = 8 X day of discharge = 12, p <0.0001, N = 840). **Conclusion:** The size of the physiotherapy team in an intensive care unit, through the use of a clinical complexity scale, presented a favorable outcome related to the operational efficiency, with the maintenance and gain of the quality of care provided, depicting a model based on value, following the premise that the providers are remunerated based on the outcome or result achieved to the patient, customizing it according to the patient´s needs. **Keywords:** Human Resources, Hospital Administration, Physical Therapy Department, Indicators of Health Services, Personnel Downsizing, Personnel Management.

FISIOTERAPEUTA GESTOR

Profile of hospitalized patients in the inpatient care units of a public, tertiary extra size hospital

Maria Sabrina Abrantes Toledo[1]; Rosangela Rodrigues Ferreira[1]; Priscila de Carvalho[2]; Cristiane Barbosa[3]; Guadalupe Nery Sant'Anna[4]; Clarice Tanaka[5]

[1]Fisioterapeuta Especialista em Fisioterapia Hospitalar pelo Hospital das Clínicas de São Paulo HC-FMUSP, São Paulo, SP, Brasil; [2]Fisioterapeuta Supervisora das Unidades de Internação e Gestora da Qualidade da Divisão de Fisioterapia do ICHC-FMUSP, São Paulo, SP, Brasil; [3]Fisioterapeuta do Hospital das Clínicas de São Paulo HC-FMUSP, São Paulo, SP, Brasil; [4]Fisioterapeuta Gestora de Riscos da Divisão de Fisioterapia do ICHC-FMUSP, São Paulo, SP, Brasil; [5]Professora Titular do Departamento de Fisioterapia, Fonoaudiologia e Terapia Ocupacional e Diretora da Divisão de Fisioterapia do ICHC-FMUSP, São Paulo, SP, Brasil

Objective: To evaluate the profile of hospitalized patients in the inpatient care units of a public tertiary extra size hospital. **Methods**: This is a descriptive, longitudinal, retrospective study with a quantitative approach, carried out in the 30 inpatient care units of the Central Institute of Hospital das Clínicas of São Paulo (ICHC-FMUSP). The patients' profile was identified in the records of the institution's electronic medical (HCMED, PIH and MV), considering the demographic data (sex and age) and clinical data (main clinical condition, physiotherapy priority classification, surgical procedures, ICU, mean hospital stay and hospital outcome). Patients older than

18 years and hospitalized from January to June 2018 were included in the study. **Results**: The study sample consisted of 13,877 records of inpatients. Records with incomplete and / or inconsistent data (n=6,419) were excluded, totaling a final sample of 7,458. From these data, we identified a mean age of 48.24 years, 56.03% were women, 59.65% (n=4,459) performed surgical procedures, 17.11% (n=1,276) had a hospital stay of 10 days. The most prevalent conditions were: systemic (26.8%), gastrointestinal (16.37%), oncological (11.41%) and neurological (10.98%). The rate of physical therapy priority classification was 53% of patients with clinical and functional risk (C4); 21% clinical and functional alteration (C3); 17% with no physiotherapeutic indication (C5); 6% clinical alteration (C2) and 3% clinical severity (C1). The hospital outcome was 91.2% discharge, 5.5% died and 3.3% transferred. **Conclusion**: The profile of hospitalized patients is mostly women, young adults, with systemic affections, with surgical necessity and physiotherapeutic intervention to prevent clinical and functional risks. **Keywords:** Inpatient care units, Ward, Physiotherapy hospital service; Hospital Information Systems, Health Profile

FISIOTERAPEUTA GESTOR

Effect of monitoring the physical therapy care priority classification in the clinical and functional evolution of hospitalized patients in the inpatient care units

Priscila de Carvalho[1]; Rosangela Rodrigues Ferreira[2]; Maria Sabrina Abrantes Toledo[2]; Cristiane Barbosa[3]; Carolina Mendes do Carmo[4]; Clarice Tanaka[5]

[1]Fisioterapeuta Supervisora das Unidades de Internação e Gestora da Qualidade da Divisão de Fisioterapia do ICHC-FMUSP, São Paulo, SP, Brasil; [2]Fisioterapeuta Especialista em Fisioterapia Hospitalar pelo Hospital das Clínicas de São Paulo HC-FMUSP, São Paulo, SP, Brasil; [3]Fisioterapeuta do Hospital das Clínicas de São Paulo HC-FMUSP, São Paulo, SP, Brasil; [4]Fisioterapeuta Coordenadora e Gestora de Planejamento e Inovação da Divisão de Fisioterapia do ICHC-FMUSP, São Paulo, SP, Brasil; [5]Professora Titular do Departamento de Fisioterapia, Fonoaudiologia e Terapia Ocupacional e Diretora da Divisão de Fisioterapia do ICHC-FMUSP, São Paulo, SP, Brasil.
dos pacientes para que o gestor dimensionem do atendimento assistencial da equipe

Objective: To evaluate the effect of physiotherapeutic care monitoring on the evolution of hospitalized patients in the inpatient care units of a public tertiary extra size hospital. **Methods**: This is a descriptive, longitudinal, retrospective study with a quantitative approach, carried out in the 30 hospitalization units assisted by the Physiotherapy Division of the Central Institute of Hospital das Clínicas of São Paulo (ICHC-FMUSP). The Physical Therapy Care Priority Classification (CPAF) is a tool created by internal physiotherapists and is used daily by physiotherapists in the hospitalization units. The CPAF categorizes the priority of physiotherapeutic care and monitors the clinical and functional evolution of patients during hospitalization. The classification identifies 5 levels of care priority: C1 - clinical severity, C2 - clinical alteration, C3 - clinical and functional alteration, C4 - clinical and functional risk and C5 - with no physical therapy indication. The CPAF data were obtained through the records of the institution's electronic medical (HCMED, PIH and MV) to compare the evolution of the patients between hospital admission and discharge moments. After comparison, the results were categorized into: maintenance, improvement or decline of CPAF. Patients older than 18 years and hospitalized from January to June 2018 were included in the study. **Results:** The sample of this study consisted of 7,458 records of hospitalized patients. The CPAF rate at admission was 53% of patients with clinical and functional risk (C4); 21% clinical and functional alteration (C3); 17% with no physiotherapeutic indication (C5); 6% clinical alteration (C2) and 3% clinical severity (C1). The CPAF rate at discharge was: 57% of patients with clinical and functional risk (C4); 19% clinical and functional alteration (C3); 15% with no physiotherapeutic indication (C5); 6% clinical alteration (C2) and 3% clinical severity (C1). Based on the CPAF, when comparing hospital admission and discharge data, the patients had a 55% improvement, a 44% maintenance and a 1% decline. **Conclusion**: The CPAF monitoring was satisfactory, since the hospitalized patients evolved with improvement and maintenance of the clinical and functional condition. **Keywords:** Patient care; Physiotherapy hospital service; Hospital information systems.

FISIOTERAPEUTA GESTOR

Innovation on physiotherapeutic management: implementing an online operation center

Priscila de Carvalho[1]; Alcir Alves dos Santos Junior[2]; Davi Rocha da Silva[3]; Francis Mironescu Tomazini[4]; Carolina Mendes do Carmo[5]; Clarice Tanaka[6]

[1]Fisioterapeuta Supervisora das Unidades de Internação e Gestora da Qualidade da Divisão de Fisioterapia do ICHC-FMUSP, São Paulo, SP, Brasil; [2]Desenvolvedor Sênior - Núcleo de Informações Corporativas (NIC) do ICHC-FMUSP, São Paulo, SP, Brasil; [3]Programador Sênior - Núcleo de Informações Corporativas (NIC) do ICHC-FMUSP, São Paulo, SP, Brasil; [4]Analista de Negócios- Núcleo de Informações Corporativas (NIC) do ICHC-FMUSP, São Paulo, SP, Brasil; [5]Fisioterapeuta Coordenadora e Gestora de Planejamento e Inovação da Divisão de Fisioterapia do ICHC-FMUSP, São Paulo, SP, Brasil; [6]Professora Titular do Departamento de Fisioterapia, Fonoaudiologia e Terapia Ocupacional e Diretora da Divisão de Fisioterapia do ICHC-FMUSP, São Paulo, SP, Brasil

Objective: To assess the effectiveness on managing and assistance processes after the implementation of an online operation center at Physiotherapy Department of a public, tertiary, high-end hospital hospital. **Method**: This is a descriptive, exploratory survey, carried out at the Physiotherapy Department of the Instituto Central Hospital das Clínicas de São Paulo (ICHC-FMUSP), between January and August 2018. The online operation center is a view composed by data gathered in real time from the electronic medical book records of the institution (MV) to aid the physiotherapy manager at the team design. The categories that make up this view are: patient´s name, hospital record, unit, priority classification for physiotherapeutic service (CPAF), functional classification and record for last physiotherapeutic service. The results were compared 4 months before and 4 months after the implantation of the operation center. The effectiveness in the managing and assistance processes was assessed through the work hour/man demand of 3 collaborators in charge of the team sizing (1 physiotherapy manager and 2 administrative supporters), number of administrative and assistance collaborators, and assistance productivity per physiotherapist. **Results**:

Comparing periods before and after implementing the operation center, we identified 82.08% (before=480 h, after=86 h) of reduction of the work hour/man for the physiotherapy manager and 86.56% (before =1.280 h, after=172 h) for the administrative supporters). The assistance productivity of the physiotherapy increased 9.90%. This result made it possible to restructurate of the work processes, and relocate human resources into other activities, using human asset on an effective way (50% [n=1] of the administrative team in charge of the sizing, 2,23% [n=8] of the assistance team in physiotherapy). **Conclusion**: The online operation center presented itself effective in the managing and assistance processes by optimizing human resources and increasing the assistance productivity per physiotherapist. **Keywords**: Human resources management; hospital physiotherapy service; human resources; hospital administration; hospital information systems.

FISIOTERAPEUTA GESTOR

Scheduling optimization for the start of the physiotherapeutic program at the Rehabilitation Center of the Hospital Sírio-Libanês

Maria Ayako Sakuraba Medeiros[1]; Maria Rita de Souza Lima[1]; Paloma Rubinato Perez Lopes[1]
[1]Hospital Sírio-Libanês– SP, Brazil. E-mail: maria.asmedeiros@hsl.org.br

Objective: To optimize scheduling for the start of the physiotherapeutic program at the Rehabilitation Center of the Hospital Sírio-Libanês: to increase the average annual percentage (from 79% to 85%) of the patients starting treatment within ten days, to reduce the dropout rate of the waiting list from 7% to 5%, and to increase patient satisfaction in relation to scheduling from 8.7 to 9 (10 being the maximum satisfaction) in three months. **Methods**: We used the Lean Six Sigma® strategic thinking to plan, execute, control, and analyze data and results. The indicators and their bases for the understanding of the problem were analyzed, and, subsequently, a flowchart was made to better understand the process. Several discussions were then held with the professional team involved in the scheduling process and physiotherapists, where we listed and analyzed the possible causes of scheduling problems and feasible solutions, analyzed by the Matrix of Effort versus Impact and the Five Whys tools, and then, we put our actions on a spreadsheet using the methodology 5Ws and 1H. The main actions were: to implement the visualization of the vacancies with the use of an Excel spreadsheet, optimization of the provisioning on the previous day for the better visualization of new scheduling opportunities, reinforcement of the application of the policy of absences and cancellations, and to increase the engagement of the team in these processes. **Results**: We increased the percentage of patients scheduled in up to ten days to levels above 90%, we reduced the queue dropout rate to zero, and increased the satisfaction score to above 9 in relation to the schedule, in the stipulated time. **Conclusion**: The increase of the engagement of the involved team of the Rehabilitation Center was determinant to reach this positive result. The participation of all team members, from planning, execution and control, using Lean Six Sigma tools tailored to our needs was paramount. **Keywords:** rehabilitation; Lean Six Sigma®; scheduling; physiotherapy, physical therapy; management.