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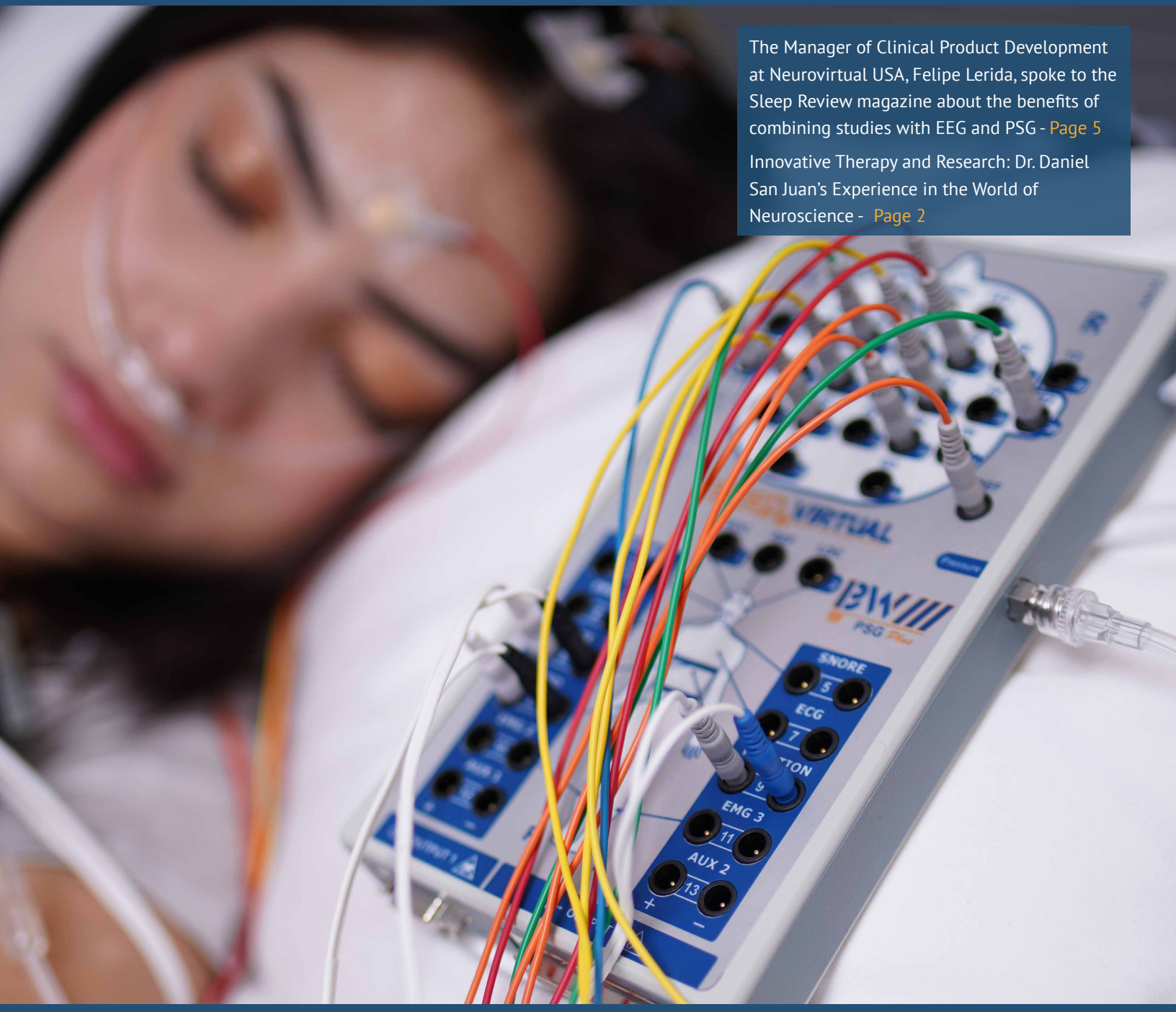
NEUROVIRTUAL news



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Innovative Therapy and Research: Dr. Daniel San Juan's Experience in the World of Neuroscience

Neurovirtual: Hello Dr. Daniel. We would like to thank you on behalf of Neurovirtual for accepting this interview. Could you tell us a little bit about your professional and academic background?

Dr. Daniel San Juan: I want to thank Neurovirtual for inviting me to tell a little bit about my professional trajectory as an adult neurologist, clinical neurologist, and epileptologist. During all these years at universities in Mexico – Universidad Nacional Autónoma de México and Harvard University (USA) – and then with my master's degree in Germany, I had the opportunity to acquire the skills and knowledge necessary to comprehensively assist neurological patients.

NV: How was your experience as the Mexican Society of Clinical Neurophysiology president?

Dr. DSJ: It was a particular honor to preside over the Mexican Society of Clinical Neurophysiology, which has a long tradition in the field. The institution was completed within the 50 years that I was president. Through direct contact with my fellow Mexicans, I had the opportunity to gain an overview of the current state of neurophysiology. Aside from the challenges, there are also opportunities to improve them. It was a truly enriching experience both personally and professionally, as well as academic, which is the society`s goal.

NV: What was your experience as a researcher at the Mexican National Institute of Neurology and Neurophysiology?

Dr. DSJ: The National Institute of Neurology is a top-notch neurological center. It is one of the centers of excellence in Neurology in Latin America. It was an honor that when I started working at this institute in 2008 I had access to all research that had the objective to study human beings' nervous systems. In addition, I had the opportunity to learn about preclinical and animal research. It is important to note that it is difficult for other institutions in Mexico or Latin America to concentrate so much research on the main neurological diseases that affect Mexicans. So, I believe it has been enriching for my training, not only as a scientist but also as an academic and administrator.

NV: As an active member in the scientific research development around neurology and neurophysiology, what challenges are you currently facing and how? Can more research be done in neurology, epilepsy, and neurosurgery fields?

Yes, there are many challenges that clinical neuroscience research still faces. At the Instituto Nacional de Neurologia

> "Transcranial direct current cathodic stimulation in refractory epilepsy: a non-invasive neuromodulation therapy" - ***This therapy is innovative, experimental, and non-invasive, as the name implies. It has a long history and allows brain activity to be modulated. Upon returning to Mexico in 2008, after my studies at Harvard University, I saw that there were no resources available to treat patients with difficult-to-control epilepsy.***

research is carried out in the three main clinical neuroscience areas: psychiatry, neurology, and neurosurgery. Each of them is individual, with different approaches, but the neurological problems are similar. We have, for example,

Alzheimer's disease, and vascular and brain neurological diseases. Despite not being so common globally, the management of brain tumors by neurosurgery is also a challenge that continues to exist. I believe that infrastructure is an important element, as much as human resources and training. Medical specialists must have time to carry out research and build it at a high level.

Government institutions, including public ones, also need funding for their maintenance. This has to do with the resources that each country has, whether economical or financial, for cutting-edge projects.

I believe that these are the most important elements to determine that a group of researchers, in this case, has access to patients to carry out research: technological resources and training. In addition, funding is necessary to support these investigations in the short or long term.

NV: Doctor, among your more than seventy publications on neuroscience, which one do you consider the most challenging?

Dr. DSJ: It's an interesting question because I think it is also related to professional development. Probably the first one, which seemed more challenging to me because I was learning. But as you progress it follows the same learning curve. Currently, I think the most challenging is a clinical trial because we involve human beings, especially children.

Mainly when I have to perform interventions. These are the most challenging because many scientific, academic, ethical, precautionary, and safety challenges need to be faced.

Interventions were carried out pharmacologically and non- pharmacologically, which posed the greatest challenge for the researcher. Not just for me, but everyone involved in it. Today, when one-off investigations are not carried out, it is necessary to coordinate scientific and international research teams, which poses an even greater challenge than carrying them out locally.

NV: About your publication, "Transcranial direct current cathodic stimulation in refractory epilepsy: a non-invasive neuromodulation therapy," published by the American Journal of Clinical Neuropsychology, could you comment on how this neuromodulation therapy is performed?

Dr. DSJ: Of course! This therapy is innovative, experimental, and non-invasive, as the name implies. It has a long history and allows brain activity to be modulated. Upon returning to Mexico in 2008, after my studies at Harvard University, I saw that there were no resources available to treat patients with difficult-to-control epilepsy. We then collaborated with the same Harvard professors to enable the implementation of this experimental technology in our patients. In 2011, we first treated patients with Rasmussen's encephalitis, which is a severe and progressive form of encephalitis, and the results were positive. The treatment was replicated in Turkey and Germany. As it is rare, or rather not so easy to get patients to receive this treatment, we did this study now in collaboration with Boston Children's Hospital. This is the article that is published in the Journal of Clinical Neuropsychology in the USA. We included children and adult patients that are seen much more frequently. What we found is that it is a safe and effective therapy.

> ***I think the way these devices can be promoted or recommended is basically through "how it works". There are not many neurophysiologists in the field, even in the United States it is not a very large group. With the high quality of Neurovirtual equipment, we easily recommend these types of devices and brand with which we carry out studies as they also allow data processing.***

The reduction in the number of seizures in these patients is around 40%. With that, the new drugs added to the treatment did not offer so many effects in reducing the number of seizures. So, it seems like a good option. It is important to point out and convince the scientific community that it is going well . We believe this is an important publication because it is international, multicentric, and also includes children.

NV: Doctor, and what hypothesis does this research propose?

Dr. DSJ: Dr. DSJ: The heart of research like this – about neuromodulation – is that we can change or inhibit areas that have the highest level of epileptic activity. And with that, it is possible to reduce the number of seizures in patients.

More interesting than seeing the surrounding phenomena is that patients have fewer seizures. We achieve up to 50% reduction, which is not easy.

> ***This is a very important question because it has been discussed that patients can be operated on at many ages. However, in extremes of life, it is much more difficult, for example in newborns or patients over 65 years old. For medical and anesthetic reasons, not for neurological reasons. Most patients, unfortunately, have an average of 19 to 20 years delay in evaluation for epilepsy surgery.***

NV: Doctor, could you tell us about the invitation to be the editor of the Journal of Clinical Neuropsychology in the United States?

Dr. DSJ: Sure. I have been an active member and am now a fellow of the American Society for Clinical Neurophysiology since I returned from the US. I had the opportunity to be a professor at the society's annual congresses. In one of them, where we were presenting a symposium focused on these experimental non-invasive brain modulation therapies, the idea arose that this could be on paper. The editor-in-chief, Dr. Hossaín, personally made invitations to all panel members who were Mexican, as well as a US representative. Now it's there on paper so that everyone, even those who didn't attend the conference, can have access to this information, ideas, challenges, and developments that non-invasive neuromodulation entails today

NV: Is this an alternative treatment to surgery? For what types of epilepsy can we consider neuromodulation?

Dr. DSJ: In this particular edition, we suggest that it can be applied to focal epilepsies. It is not yet a proven therapy and therefore should not delay a candidate for epilepsy surgery. However, unfortunately, not all patients are candidates for epilepsy surgery. Some are not even rated for it. Whether due to myths, risks, or lack of reference from doctors. Therefore, it constitutes a therapy that in the future intends to be an alternative for some selected patients. Not for everyone.

NV: In which cases is it recommended that the patient be operated on to treat epilepsy? Does this surgery recommendation change according to the patient's age?

Dr. DSJ: This is a very important question because it has been discussed that patients can be operated on at many ages. However, in extremes of life, it is much more difficult, for example in newborns or patients over 65 years old. For medical and anesthetic reasons, not for neurological reasons. Most patients, unfortunately, have an average of 19 to 20 years delay in evaluation for epilepsy surgery. However, if a patient has epilepsy that cannot be controlled with antiepileptic drugs, they would be a candidate to be evaluated.

Second, if the comprehensive assessment shows that all studies point to all abnormalities, both by neuroimaging and by clinical and electroencephalographic findings, it indicates that there is an area responsible for generating all seizures, and it can be removed. Putting it in context, adding an antiepileptic under these conditions, even if it's very new, gives you 2% freedom from seizure. But maybe with surgery, at best, it will bring 80%, in addition to opening the possibility of healing.

NV: Would you recommend Neurovirtual to another colleague?

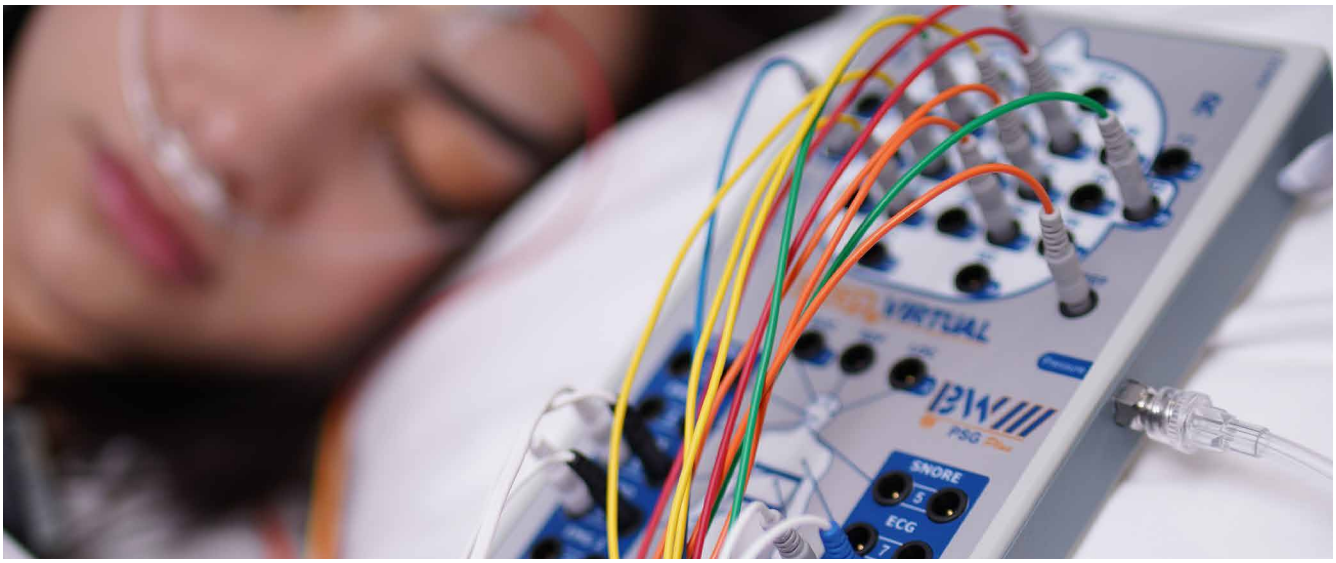
Dr. DSJ: Yes. It was another colleague who also recommended Neurovirtual to me. I think the way these devices can be promoted or recommended is basically through how it works. There are not many neurophysiologists in the field, even in the United States it is not a very large group. With the high quality of Neurovirtual equipment, we easily recommend these types of devices and brand with which we

carry out studies as they also allow data processing, not only the standard but other options offered by the company.

NV: Doctor, with that question we end our interview. Once again, thank you for your time and for accepting.

Dr. DSJ: Many thanks to Neurovirtual for the invitation. And to all my fellow neurophysiologists and those who are interested in clinical neuroscience and in the particular analysis of brain functions, these devices that allow the recording of brain activity and the diagnosis and modification of treatment are highly recommended, reliable, and allow flexibility to your day today. Thank you very much.

PSG and EEG combined: Neurovirtual´s specialist talks to Sleep Review Magazine about this possibility



The clinical product development manager for Neurovirtual USA, Felipe Lerida, RPSGT, was key for Sleep Review's news about the advantages of combining EEG with PSG systems.

Lerida explained that in general most sleep disorder and neurology centers will be a good fit for a combination PSG-EEG system. He highlights that this alternative is especially beneficial to regional hospitals that have integrated sleep medicine under cardiopulmonary and do not offer any EEG services. It is also a great choice for large sleep centers not at full capacity that can benefit from adding additional EEG services.

Adding to the article, we heard from Sejal V. Jain, MD, associate professor of neurology and pediatrics at the Banner University Medical Center in Tucson. Jain emphasizes that combined systems are also convenient for the patients: "It is especially helpful for kids as they don't have to spend additional time in hospital/labs if both tests are done simultaneously."

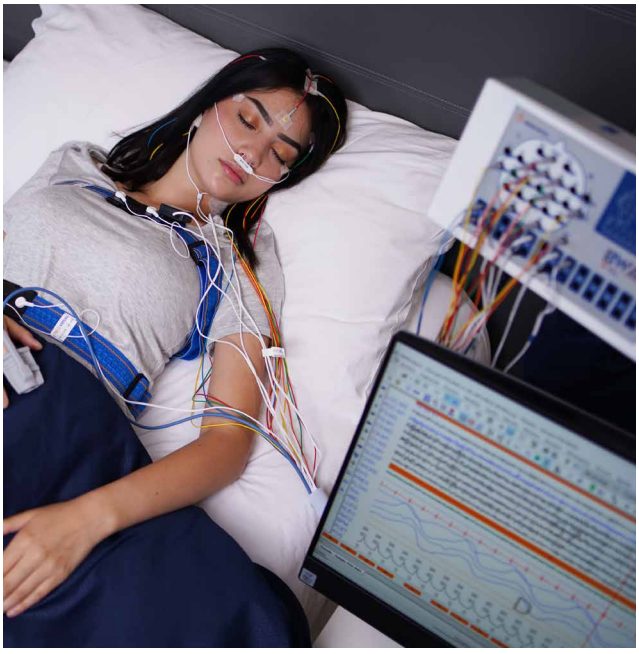
Lerida shares the same thought and adds that "all types of patients who require an EEG or PSG can benefit, from inpatient neonatals in the ICU with combination long-term EEG and PSG studies to pediatrics, adolescents, and adults with routine EEG/long-term EEG studies and PSG studies."

In financial terms, this option also presents strategic advantages because it can help eliminate duplicate computers and input boxes, providing some space and cost savings. Combination systems allow labs to run both day and night studies, which can help sleep labs get a faster return on investment.

Neurovirtual offers several EEG and PSG options including combination systems. Neurovirtual's EEG and

> ***"It is especially helpful for kids as they don't have to spend additional time in hospital/labs if both tests are done simultaneously."***

PSG equipment uses the same software platform, which helps to integrate both departments in a user-friendly and intuitive manner. If for any reason it is important to not share information between EEG and PSG departments, Neurovirtual's software platform can create specific permission groups to access the appropriate data according to a client's necessities.



The American Academy of Pediatrics Celebration of Pediatric Pulmonology and Sleep 2022

In a world continually changing, it is fundamental to count on tools used by medical professionals to stay in tune with the rapidly evolving practices in medicine. Companies that work closely with the community know that is necessary to support these CME courses in the same way, that academies and associations have the resources and availability to follow through with these initiatives.

This is not new for Neurovirtual, and again the team was present for an important updated course in clinical pediatric pulmonology and sleep medicine. The American Academy of Pediatrics Celebration of Pediatric Pulmonology and Sleep 2022 took place in Scottsdale, Arizona on February 18th and 20th.

According to the organizers, the American Academy of Pediatrics and American College of Chest Physicians, "The course featured nationally prominent faculty, presenting topics that highlight current issues in pediatric pulmonology and sleep medicine." During the event, you could sit in on lectures, interactive seminars, and Q&A sessions. This was a great opportunity to interact directly with physicians, advanced practice providers, allied healthcare providers, and students of all different education levels. This particular event happens every other year, and during this last edition 78 visitors had the opportunity to check out the BWIII PSG Plus, BWIII PSG, and BWMini Compass HST, Neurovirtual's latest products and literature.

> ***"This program brings together people who are dedicated to pediatric sleep medicine and pulmonology, which allows the sharing of ideas and solutions for the field at large."*** *- Sergio Solis, Neurovirtual National Account Manager*

Pediatric pulmonologists sleep medicine physicians, respiratory therapists, sleep laboratory technicians, and other allied healthcare professionals were able to sit in on more than 30 topics presented by specialists, including normal and abnormal sleep in infants, sleep disorders other than OSA, and functional respiratory disorders, among others.

In the opinion of Sergio Solis, Neurovirtual National Account Manager, "This program brings together people who are dedicated to pediatric sleep medicine and pulmonology, which allows the sharing of ideas and solutions for the field at large."

A solid trajectory of partnership

The relationship between Neurovirtual and the American Academy of Pediatrics is more than an event. Neurovirtual is committed to supporting pediatric pulmonary and sleep programs sponsored by the academy, in addition to being a vendor for Children's Mercy Hospital in Kansas City and Cincinnati Children's Hospital in Ohio. It is an enlightening partnership with a promising path towards increasing the humanization of diagnostics.

Back to events: Neurovirtual at the XVIII Brazilian Sleep Congress

A four-day event marked the restart of Neurovirtual's long journey to the most important congresses around the world. Organized by the Brazilian Sleep Association, Brazilian Sleep Medicine Association, and the Brazilian Odontology Sleep Association, the XVIII Brazilian Congress of Sleep was a complete success. The event took place from December 12th to 15th at Frei Caneca Convention Center, one of the most prestigious event spaces in São Paulo.

Following all health protocols to ensure the safety of all attendees, the congress had eight conference rooms and more than 170 specialists from different sleep areas. They came from different parts of the world, such as Australia, Mexico, France, England, Germany, and the United States.

Neurovirtual: Knowledge and innovation

Since 2015, Neurovirtual has been attending this imSince 2015, Neurovirtual has been attending this important congress, and as one of the largest equipment companies in this market, they would not have it any other way. After all, it is an essential place to promote their technology and understanding of advances in sleep medicine research, providing essential materials about their continual product innovation.

The company presented BWAnalysis Sleep Diagnostic Suite Software demonstrations and their polysomnography equipment:

- BWIII PSG Plus – with its functionality that allows performing an EEG and Polysomnography from the same hardware and software platform.
- BWMini HST – Lightweight and portable, the BWMini HST amplifier is designed for HST Type 1/2/3 exams (27 channels).
- BWMini HST Compass – modern, complete, and compact for recording type 3 unassisted polysomnography home exams.

More than 50 visitors a day came to visit the company's booth. It was very well located near the conference rooms.

The Future of Sleep Medicine and Neurology

During those four days, many relevant topics regarding sleep and neurology were presented. Leticia M. Santoro F. Azevedo, from the Child's Institute, Clinics Hospital, University of São Paulo, gave a pediatrics lecture about Child Polysomnography II as a tool to diagnose childhood sleep disorders and non-REM parasomnia.

Dr. Alan Eckelli, professor at the University of São Paulo in Ribeirão Preto (Brazil), discussed his opinion on sleep apnea diagnosis and treatment in Brazil, with its realities and challenges. There were also discussions about epilepsy and sleep differential narcolepsy diagnosis and also on wearable devices for diagnosis and management of sleep disorders.

In addition, during the four-day event poster sessions, more than 190 works focusing on sleep were presented. Assistants were able to present themselves for technical certification exams in polysomnography, sleep psychology, sleep speech therapy, and sleep dentistry.

CALENDAR OF EVENTS

Neurovirtual participates on average in 20 to 30 congresses and conferences in different countries around the globe. Taking our goal to humanize the diagnostic, we pride ourselves on being part of this community and being able to give our contribution to clinicians and patients.

Below you will find the list of events for 2022 where Neurovirtual will be presenting its solutions to make neurology and sleep diagnostics more human! We hope to see you there!

The **BWIII EEG Plus ICU Brain Monitor** is an all-in-one cart based system which can perform routine EEG, LTM, and ICU Monitoring for increased mobility demands.

Request information

USA

The American Academy of Pediatrics
Phoenix, AZ
February 18-20, 2022

SLEEP 2022
Charlotte, NC
June 4-8, 2022

BRAZIL

39th Congress of the Brazilian Epilepsy League
Campinas, SP
August 11-13, 2022

XXX Congress of the Brazilian Academy of Neurology
Fortaleza- CE
September 21-24, 2022

XIX Brazilian Congress of Sleep 2022
Goiânia- GO
November 30 - December 04, 2022

COLOMBIA

Symposium on Sleep in Pediatric Patients - Asconi
Barranquilla
June 18-19, 2022

I International Congress of Neurology - Eduardo Palacios Sanchez
Cartagena
July 24-27, 2022

XII Latin American Epilepsy Congress
Medellin
October 1-4, 2022

MEXICO

XLIV Annual Meeting of the Mexican Chapter of the International League Against Epilepsy - Camelice
Guadalajara- Jalisco
August 10-13, 2022

XIV International Congress of Sleep Medicine
Guadalajara- Jalisco
November 18-20, 2022

Contact us:
Neurovirtual News - 3303 W Commercial Blvd. Fort Lauderdale, FL 33309 - USA
+1 (786) 693-8200 - info@neurovirtual.com / **www.neurovirtual.com** - **Marketing:** Jessika Brito (jessika@neurovirtual.com). **Supervision:** Ed Faria (efaria@neurovirtual.com). **Contributors:** Sergio Solis (ssolis@neurovirtual.com); Allison Ries (aries@neurovirtual.com).