



**ENHANCING HEALTH AND
FUNCTION THROUGH EDUCATION AND
RESEARCH IN THE FIELD OF
PHYSICAL MEDICINE AND
REHABILITATION**

Physiatrist's Voice

NEWSLETTER

September 2022

PRESIDENT'S MESSAGE

Andrew L. Sherman M.D.

A Call to Florida Physiatrists!

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One of the most debated and stated philosophical questions cited is, "If a tree falls in a forest, and no one is around to hear it, does it make a sound?"

It was John Locke who stated that no one would hear the sound since it is a mere sensation of falling that is not perceptible if not present.

However, English philosopher, George Berkeley, in his work "A Treatise Concerning the Principles of Human Knowledge," felt differently and was confident that a tree will make a sound if it is an object existing in one's mind. If we know that there are trees, that trees fall, then even if not physically present, each fall registers in our awareness.

Without getting too deep into the debate, it is clear John Locke never heard of social media posts so that previously "unheard, unseen" events become "viral" events broadcast to the world to be "heard" and known forever.

In the context that is in our organization, the Florida Society of Physical Medicine and Rehabilitation (FSPMR), why would this question above apply? It is my belief that although membership is currently small, maybe many current physiatrists have never even considered FSPMR in their "metaverse." We continue to benefit from trees the FSPMR has "fallen" over the years.

The old reality was when I moved to Florida 22 years ago, PM&R was a relatively small specialty, most whom knew each other, and quite comfortable with their "niche" practices, or kingdoms. A good percentage were members of the FSPMR and used the membership to foster fellowship and when needed, protect our ability to maintain PM&R clinical practices, to stop other fields from blocking our ability to practice PM&R.



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For example, I remember in 2002, suddenly CMS stopped paying for electrodiagnostic services from PM&R! It was the FSPMR that sent a representative to CMS and educated them on the training and validity of PM&R physicians performing these services and payment, plus valuable recognition of the field, was resumed. For years, the FSPMR has worked with the FMA and other state specialist societies on similar problems that threatened our livelihood and that of our patients as well as they came up.

Now however, the landscape of PM&R has changed. We see changes to the number of practicing PM&R physicians dramatically increased and still increasing. Some of that due to relocation (no state income tax) and the rest due to the creation of new (now 7!!) PM&R residency education programs and several fellowship programs. Finally, we have witnessed an unprecedented expansion in scope of practice in PM&R to include interventional physiatry, cancer, trauma early care, sports medicine, regenerative medicine, neurotoxin, ultrasound, construction of large State of the Art Inpatient Rehabilitation Hospitals, and more. Yes, things in the PM&R world of Florida are getting larger and more complex!

Yet somehow, as I check the membership rolls, until just this year when the entire PM&R Department of Brooks Rehabilitation joined the organization, which has helped, FSPMR found itself with a similar number of paying members (non-resident members) that it had in 2000! Why the lack of engagement? Why the lack of conversion of resident members to paying FSPMR members as young and then “not so young” PM&R practicing physicians? What are the implications for our specialty in the state of Florida and the FSPMR?

As are many of the conditions we treat in PM&R, the causes for relatively low membership are “multi-factorial.” We can assume that costs, organization fatigue as many of us in PM&R identify with a subspecialty that often takes our attention, and perceived lack of “hard” benefits all play a role. Although in the past, “hard” benefits: discounts on insurance, equipment, supplies, financial advice, and other items were draws to smaller state medical organizations. (Yes, this issue is not unique to FSPMR.) Now with “internet promos,” this no longer holds as discounts are available everywhere. Finally, I often identify a lack of perceived interest getting involved with organized medicine by younger physicians since they are often more concerned with starting new lives that were so often delayed by years of medical training.

This, it is upon us who are (or even once were and dropped out) enthusiastic and grateful FSPMR members to sound the alarm, to generate interest once again in our peers and younger newly minted PM&R colleagues fresh out of residencies and fellowships, the importance of joining FSPMR. For example, we must impart our knowledge that it is the state specialty society that, often through the FMA, protects each specialty's ability to provide the clinical care each of us was trained to do, and not allow those with less training (extenders and others) to provide the same care at lesser quality while eroding our ability to earn a suitable and deserved living. It is the FSPMR that promotes the benefits of our beloved specialty to other fields and patients directly. The FSPMR that points out



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that while valuable, when necessary, more “traditional” specialties such as orthopedics, neurosurgery, and neurology cannot provide the holistic care designed to maximize function that we as PM&R specialists were trained to provide. And for many of the conditions we evaluate and treat, we often get better patient satisfaction and outcomes at less cost to the health care system.

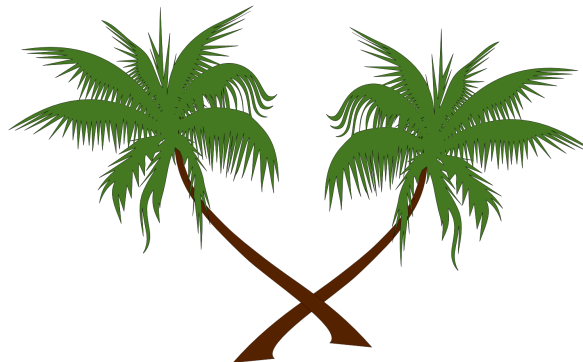
It is the FSPMR that recognizes that the expanding high quality residency training programs in Florida create not just more PM&R specialists, but more **well-trained** PM&R specialists, versed in the cutting-edge new diagnostics and treatments available. FSPMR recognizes, the true competition is not from within the specialty but from without, that by working together to promote brand awareness and quality care, FSPMR can be that agent of teamwork that lifts all boats in the PM&R community. That this is a true calling of FSPMR, the most important reason to reach out and ask for support through membership in the FSPMR from our state physicians. We ask so FSPMR can advance the daunting task of creating the environment in Florida where every PM&R physician feels valued and allow us all to accommodate larger numbers of PM&R physicians by creating ever increasing demand for our excellent services in all PM&R subspecialties.

In the end, in my humble opinion, despite the recognition that the small core of FSPMR members has done great work over the years, it is time to get the message out to a wider audience of our peers and encourage them to join with us – officially. To be heard and respected by FMA and other state societies in the fullest, the FSPMR requires the standing of a state society that, at a minimum, the majority of practicing Florida PM&R physicians endorse by becoming full members. Ideally, this credibility can be achieved by realizing membership growth in such overwhelming numbers, that everyone else looks to the FSPMR as the model for true representation of its specialty members.

So, in final, I would just like to say that I am honored to be chosen as your FSPMR president for the next two years. I hope to represent each physiatrist in this state with integrity and inclusion. I welcome direct contact to discuss any ideas for advancing the FSPMR you have, ASherman@med.miami.edu. Instead of having goals for the presidency, I hope to achieve your goals for improving FSPMR for the physiatrists in Florida as its president.

Andrew L. Sherman, MD

President FSPMR





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FSPMR Outgoing President's Thank You Speech
Mark Rubenstein, M.D., FAAPMR, FAANEM
Vice-Speaker, Florida Medical Association

7/30/22

Thank you very much for the opportunity to serve this organization and all of you for the past 2 years. It has been a privilege and a pleasure to work with you and on your behalf. My goal during these trying times has been to keep FSPMR relevant, while also trying to be your advocate at the state and national level. My President's messages in our newsletter were largely devoted to keeping you informed, and I hope that you have found them worthwhile.

Organized medicine is a calling. Many of our colleagues do not see the purpose, value, or rationale to do so. Finding the time to be committed given the challenges faced by us as physicians is difficult. I can assure you, however, that if we do NOT do something to preserve our specialty, both our future colleagues and our patients will suffer.

ABCDE:

Adversity and Business

The last two years have been a challenge in medicine given COVID, insurance over-regulation and restrictions, inflation, scope of practice battles, etc. Practicing medicine requires advanced medical training and education but also business acumen.

Commitment – All of you are attending this meeting since you are committed to your profession. People in organized medicine such as our board serve because they want to stay engaged, be informed, or simply to give back. I caution you that if we don't create a sense of commitment as physiatrists, the specialty "creep" as it is called will swallow PM&R and our profession will become less relevant.

C is also for Committees. For example the Committee formed that put together today's conference – thank you to Dr. Sherman and his team. Ken Ngo has graciously taken on the role of Chair of our Membership Committee which will seek to strengthen our society.

Dedication – All of our board members in attendance today should be acknowledged for their engagement and participation. On a personal note I would like to thank all of the board members for their personal sacrifices in giving up valuable time over the last two years in serving this organization. I would like to also thank Craig Lichtblau once again for his financial generosity in helping keep FSPMR afloat.

Ethics – Ethics has been integral to my life including outside of medicine. Having a moral compass and intellectual integrity will serve you well in your futures. Over the last 20 years I have watched many physicians move to "the dark side" and compromise their careers by abandoning basic ethical principles. It is my hope that each and every one of you will continue to have professional and personal success in the future, and I look forward to continuing to engage with this board.



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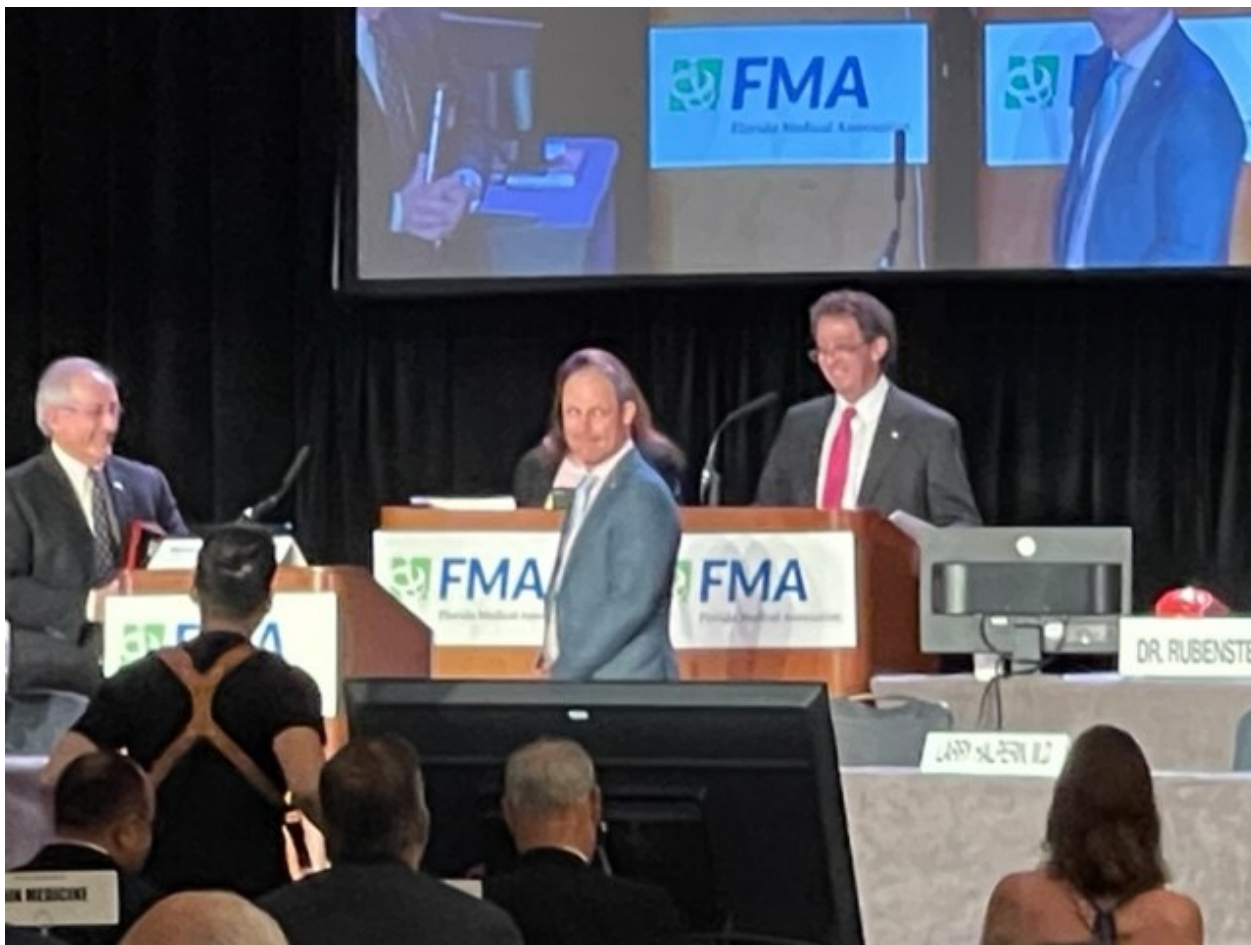
OUT GOING PRESIDENT'S SPEECH—CONTINUED

A special thank you to Lorry Davis as our esteemed Executive Director. She is the reason our board operates seamlessly, and she makes our positions easier. We as a board are grateful to have her wisdom, experience, and guidance.

.....

I turn the reigns over to Dr. Andrew Sherman. Andy is the ideal person to lead FSPMR over the coming years. His involvement in resident education as well as high levels of quality patient care make him an ideal model of the academic physiatrist. He has represented us at the national level and I am sure he will continue to do so as he leads our society. I have every confidence that he will strengthen the reputation of FSPMR, grow the organization, and insure that our specialty is still relevant. It is my personal pleasure to welcome him as our next President.

Thank you again for allowing me the opportunity to serve on this board and to serve all of you.



Mark Rubenstein MD - Vice-Speaker, Florida Medical Association



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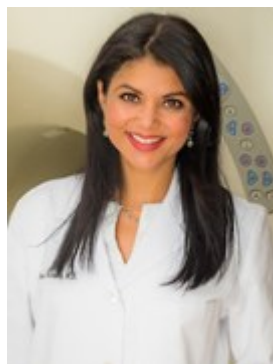
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WELCOME

FSPMR BOARD OF DIRECTORS, 2022–2024



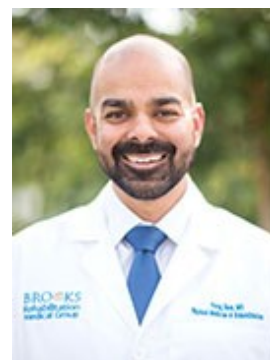
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Andrew Sherman MD



Vice President
Diana Hussain MD



Secretary
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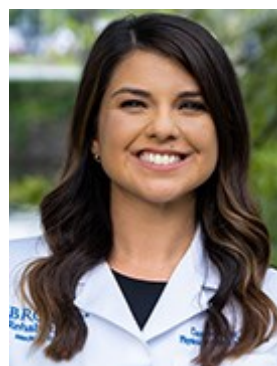
Past President Director
Craig Lichtblau MD



Member-at-large
Lindsay Shroyer MD



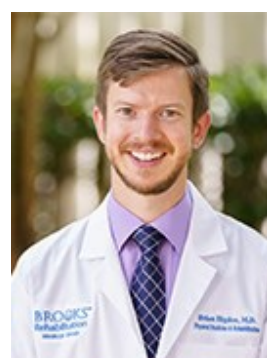
Member-at-Large
Marc Gerber MD



Member-at-Large
Cassandra List MD



Member-at-Large
Rigoberto Nunez MD



Young Physiatrist Director
Brian Higdon MD



Executive Director
Lorry Davis MEd

FSPMR Annual Meeting July 30, 2022



FSPMR President Dr Andrew Sherman with UMiami PM&R Interest Group Medical Students

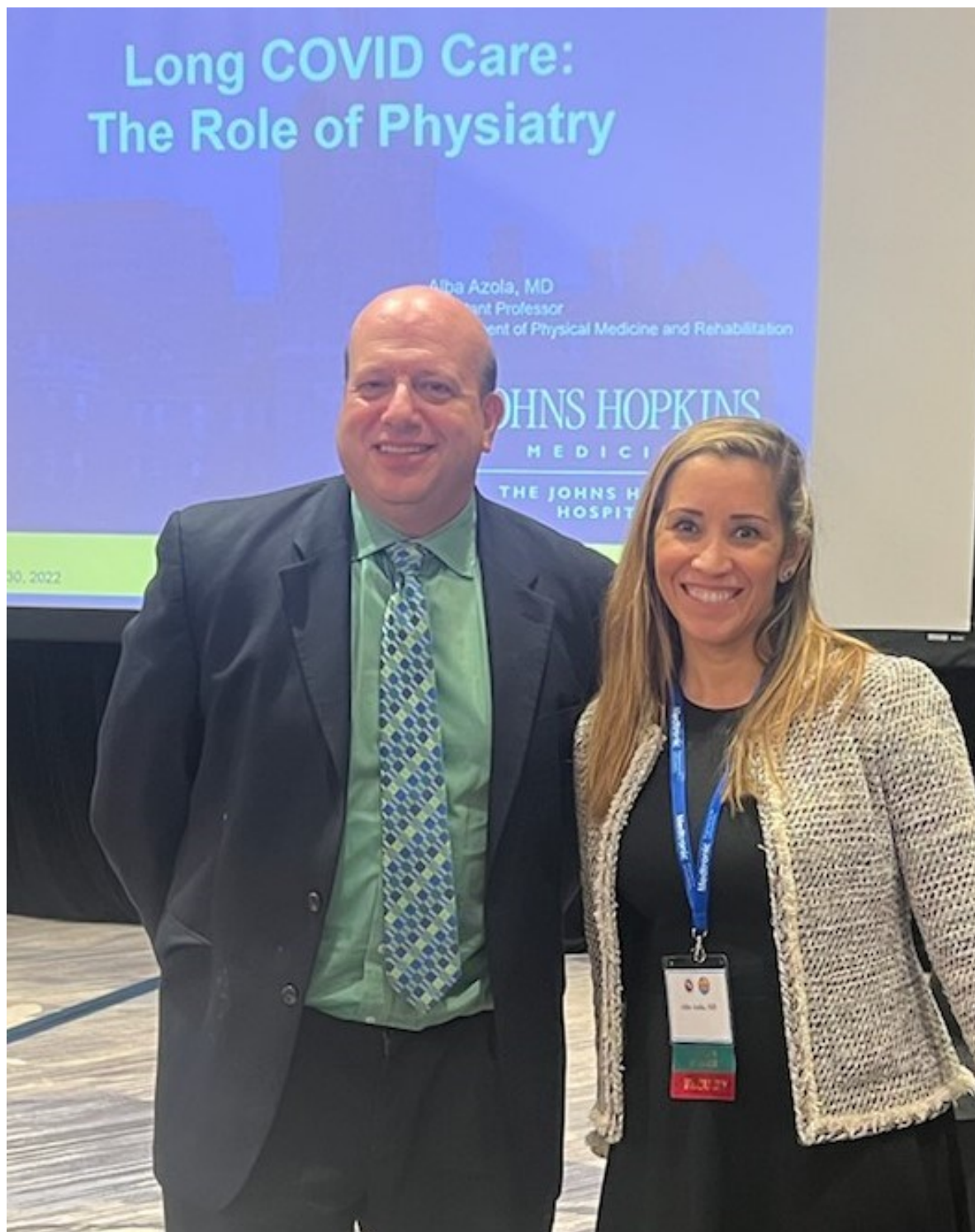


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Dr Sherman and Keynote Speaker, Dr Alba Azola





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*Lorry Davis, Executive Director, Dr. Andrew Sherman, President and
Dr. Craig Lichthblau, Past President*





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Dr. Sherman with Resident Case Presentation
Winners,

Drs Megan McGuire and Richard Morgan
Larkin Community Hospital

CONGRATULATIONS!



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Dr. Sherman participating on a FSIPP panel



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FMA Report

Diana Hussain MD, FSPMR VP

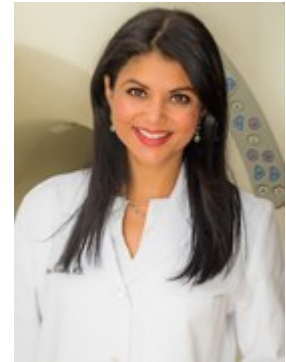
The FMA 2022 Annual Meeting went well. I represented the FSPMR in the Specialty Society Section on Friday. I also represented the Specialty Society Section in the FMA House of Delegates on the Reference Committee on Saturday.

Two resolutions were discussed during the Specialty Society Section. Resolution 22-111, Ethics Resolution (Item III) and Resolution 22-315 "abortion" (Item IV).

The Resolution 22-111, Ethics Resolution, resolved that the current FMA policy 175.003 be revised to include World Medical Association (WMA's) policies with regard to medical ethics, by the following revised statement:

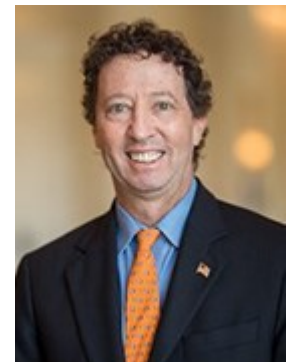
"The Florida Medical Association is committed to the principle of medical ethics and requires that all members agree and comply with the American Medical Association's (AMA's), FMA's and the WMA's principle of Medical Ethics." The Section expressed many concerns over this resolution. Mainly that the FMA and FMA members would not have the opportunity to influence the World Health Association in developing new policies and that most FMA members are not members of the WMA nor are they familiar with the code of ethics that is being proposed. The Section took the official position to oppose Resolution 22-111.

The resolution 22-315 "abortion" (Item IV) resolved that the Florida Medical Association oppose any future legislation hindering or blocking the availability of FDA-approved treatments for pharmacological termination of pregnancy, regardless of whether used for termination of other unrelated indications, when this is a matter between the physician and the patient. The Section supports this Committee's Initial Recommendation as indicated in the preliminary report. The Section found that the Committee was able to balance the interests on both sides of the issue and commends the Committee on their thoughtful consideration.



FMA Annual Meeting Update, Mark Rubenstein, MD

Resolution 22-111 was discussed extensively in the Reference Committee. Online testimony before the FMA meeting was largely in opposition to the resolution. Testimony at the Ref Comm level found it problematic that FMA members would be subscribing to a certain code of medical ethics without a voice in the policymaking process, while supporters of the resolution felt it was a minor change to existing FMA policy. Interestingly, at live Ref Comm level ALL of the testimony was opposed to the resolution. There was concern over future changes to the World Medical Association's International Code of Medical Ethics that would bind FMA members who would not get sufficient input in the process. The Committee felt these were valid concerns and took particular note that the Specialty Society Section (as noted above by Dr. Hussain) was opposed to this resolution. The Committee recommended that the resolution be "not adopted."





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FMA Report

-continued-

It was placed on the consent calendar and not extracted. Therefore, the resolution (22-111) was NOT adopted by the House.

Resolution 22-315 was entitled "Abortion" as noted above. There was another Resolution submitted prior to the meeting (22-304) which was entitled "Public Availability of Pregnancy Related Care". Due to the similarities in both the resolution content and the testimony received on line prior to the meeting, the Reference Committee discussed Resolution 22-304 and Resolution 22-315 simultaneously. Extensive testimony was heard both pro and con. Additionally, it was noted that expending a great deal of capital by the FMA on a topic that was political implications would be futile. It was acknowledged that abortion is a medical procedure, but the policy recommendations were too politically charged to become official policy of the organization. The Reference Committee felt that current FMA policy pertaining to abortion was appropriate and should be reaffirmed, while Resolutions 22-304 and 22-315 had important and pertinent content related to physician autonomy. Therefore, the Reference Committee proposed substitute language to be considered by the House of Delegates. The substitute language read as follows:

RESOLVED, That the FMA reaffirm policy P5.002.

RESOLVED, The FMA oppose legislation that would pursue criminal charges against physicians who provide medically appropriate termination of pregnancy.

RESOLVED, The Florida Medical Association oppose any future legislation hindering or blocking the availability of FDA-approved treatments for pharmacological termination of pregnancy, regardless of whether used for termination or other unrelated indications, when this is a matter between the physician and patient.

The Ref Comm substitute language for 22-304 and 22-315 was debated on the floor of the House. Ultimately, the House did vote to ADOPT the substitute language (which is therefore now policy of the FMA).

Thanks to Dr. Hussain for attending the SSS meeting and the Reference Committee proceedings. Clearly, while the entirety of the Specialty Society Meeting (SSS) was primarily devoted to extensive debate over the above 2 issues, the Reference Committee and the House valued their input (the input of the SSS). It remains appropriate for the FSPMR to continue to send representation to the SSS as there are bound to be issues which affect all of us in the future. FSPMR has a voice at the FMA, and we should continue to utilize that to protect our own mission.



Osseointegration for Amputees: Rationale and Evidence

Craig H. Lichtblau^{1,2*}, Dror Paley³, Stephen Quinnan⁴, Christopher Warburton⁵, Gabriel Meli⁶, Allyson Gorman⁷

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ABSTRACT

Amputees many times have significant difficulties from using socket prosthetic devices, which are associated with excessive weight and patient discomfort. These patients suffer a poor quality of life and are in significant need of a superior alternative. Osseointegrated prosthetic implants, which are anchored to the bone, are proving superior to socket prostheses in many cases. Here we review the rationale and evidence for the value of osseointegration in amputees.

Keywords: Osseointegration; Protheses; Prosthetics; Socket prosthetic; Amputation; Amputee; Prosthesis; Phantom pain

INTRODUCTION

According to the World Health Organization, there are about 40 million amputees across the world [1]. By 2050, it is estimated that 3.6 million Americans will be living with the loss of a limb [2]. Although prostheses offer the potential to improve amputee function, conventional prostheses—referred to as socket prostheses—have failed to achieve optimal outcomes in a very large percentage of patients [2-4].

Socket prostheses are associated with poor range of motion, they lack stability, and they cause discomfort [5]. As a result, a high rate of prosthetic abandonment has been observed, with about one quarter of adults abandoning their body-powered and electric devices and pediatric patients abandoning these devices at rates of 45% and 35%, respectively [2].

Troublingly, data demonstrate that between one in three and one in four of those expressing significant dissatisfaction with their prostheses report that they consider themselves to have a poor or extremely poor quality of life [4,6]. It is thus critical that these patients are provided with a better alternative not only to sufficiently restore functioning but also to improve their lives.

Bone-anchored prosthetic implants, known as osseointegrated prosthetic implants have been developed over the past couple of decades to overcome the challenges posed by socket prostheses and provide a superior option for prosthetic patients [1,4,7-11]. Here we describe a demonstrative case study and provide the rationale and supportive evidence for the superiority of osseointegration over socket prostheses.

LITERATURE REVIEW

Osseointegration restores function and reduces pain in 21-year-old amputee

Injury: On July 16, 2020, a 21-year-old ambidextrous female pedestrian was struck by a vehicle that had run a red light and suffered crushing injuries to her left lower extremity in addition to other injuries to her right lower extremity. She was taken by ambulance to the local emergency department, where she received an emergency left above-knee amputation and a second revision surgery before being discharged from the hospital.

Socket prosthesis: On February 8, 2021, she sought our consultation after being wheelchair-bound (Figures 1 and 2). Her prosthesis weighed 10.7 pounds and caused severe pain in her

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distal stump, rendering it useless to her. A physical examination revealed multiple neuromas in her residual left above-knee stump. Her physical examination results are shown in Table 1.

Targeted muscle reinnervation: The patient was admitted to a Level 1 Trauma Center on April 13, 2021. To restore functioning above the left knee stump, the orthopedic surgeon performed targeted muscle reinnervation on three nerves in the distal stump. The surgery was successful, and the patient healed without any complications, making her an ideal candidate for osseointegration.



Figure 1: Front view of patient with original prosthesis.



Figure 2: Side view of patient with original prosthesis.

Osseointegration: The patient underwent osseointegration on 08/17/2. Figure 3 shows the new implant. The patient healed and during the post-operative period she developed a superficial skin infection that was treated with oral antibiotics without sequela. She had no other complications and participated in an outpatient rehabilitation program under direct medical supervision of a physiatrist. The patient's post-operative rehabilitation program included pre-prosthetic training and prosthetic training with a new custom fabricated prosthesis that was more than three pounds lighter than her original socket prosthesis. The patient participated in the outpatient rehabilitation program and completed the program without any medical or surgical complications.

Outcomes: Following the osseointegration procedure, patients tend to experience restored functioning and significant reductions in residual stump pain, including phantom limb pain. Donning and doffing the prosthetic device become much easier for the patient with the new prosthesis, and good osseoproprioception from ground reaction forces provides an improved gait and body mechanics in areas that had been compensating for loss of function. With improved body mechanics, patients often experience a significant reduction in lower back pain. Functional abilities usually improve, enabling amputees to ambulate independently and farther with prostheses that are attached with an osseointegration implant. The above example of osseointegration demonstrates a weight reduction in the patient's original socket prosthesis from 10.7 pounds to 7.5 pounds, a reduction of 3.2 pounds with her new osseointegration prosthesis. In this example, the patient could not ambulate with her original heavy socket prosthesis, but following osseointegration, the lighter weight of her new prosthesis and the

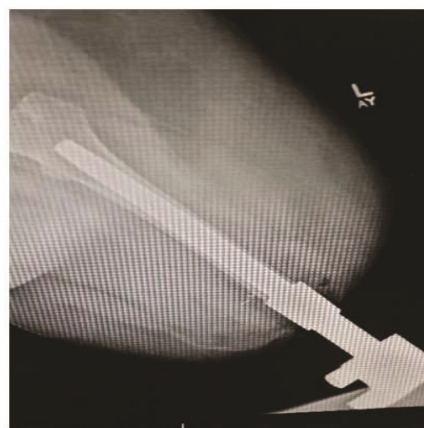


Figure 3: Osseointegration implant.

Table 1: Patient's physical examination results on February 8, 2021.

Physical examination	Result
Constitutional (General):	Well-nourished, well-developed female. (Vital signs): Stable, afebrile.
Psychiatric	Alert and oriented x3. Short and long-term memory intact. Patient was in no acute distress.
Skin	The patient's left above-knee stump was well-healed. No masses, lesions, discharge, or open areas. She was extremely painful to the touch and unable to wear her prosthetic device.
Extremities	The patient has a left above Knee amputation. The residual limb has a well-healed scar with no open areas. The patient has tenderness and exquisite pain to light palpation in her distal stump in the sciatic and femoral nerve distributions.
Gait	The patient was unable to ambulate with her current prosthesis due to pain in her distal stump and the weight of the prosthesis.

elimination of her heavy and painful socket allowed her to become an independent ambulator. The resulting gait cycle is illustrated in (Figures 4).

Osseointegration superiority over socket prostheses: The rationale and evidence

While this case study demonstrates how the limitations of socket prosthesis can be overcome through osseointegration, it is important to consider the specific weaknesses of socket prosthesis and strengths of osseointegration to understand the contexts in which osseointegration offers particularly high value to amputees.

Socket prostheses often offer limited motor control and cause pain and discomfort: Socket prostheses are associated with low satisfaction levels, which are the result of a combination of factors that limit the value of socket prostheses [1]. For instance, socket prostheses offer little limb proprioception and light touch sensation, which limit intuitive motor control [2].

In addition to difficulties with mobility, socket prostheses also cause pain and discomfort [4]. When asked about the problems they faced with their prostheses, survey respondents' most common response was that they were bothered by heat or sweating in the prosthetic socket [4,12]. They also commonly reported skin irritation and sores from the socket, difficulty walking, and pain in the residual limb.

In addition to pain, poor socket fit can cause instability and local tissue damage [5,13]. It can also increase the stress on other parts of the body that work to compensate for the deficits associated with the lost limb and the prosthetic.

These downsides of socket prostheses result from the nature of the technology. Residual volume changes, failure in load stability and transfer, and poor suspension are common challenges with socket-suspended prostheses [8]. Though the fit of the socket in the residual limb is critical for the success of the prosthesis, the dynamic nature of the residual limb makes fitting the stump-socket interface a significant challenge and can lead to the loss of even a well-established socket fit [4]. Complicating socket fit is that fitting a patient with a prosthetic socket requires manual work that is labor-intensive and lacks quantifiable information that could enable measuring and reporting on the fit [5].

Osseointegration overcomes challenges associated with socket prostheses: Osseointegration refers to the direct connection between the surface of a metal implant and living bone [4,14]. The technique was developed by Per-Ingvar Branemark and further refined by his son, Rickard Branemark [2]. Osseointegration-achieved direct skeletal fixation has been successfully used in a variety of applications including dental implants, joint replacements, bone-anchored hearing aids, and maxillofacial reconstruction [4,9].



Figure 4: Patient gait cycle following osseointegration procedure.

The use of osseointegration for attaching prosthetic limbs began in the 1990s and is beginning to be performed across the world to overcome the limitations of socket-based prostheses [14]. By attaching prostheses directly to the bone of the residual limb, the need for the socket interface and the challenges it presents are avoided [4,7–10,15,16].

Most of those who switch from traditional socket prostheses to osseointegrated ones show drastic improvements both objectively and subjectively [10]. These improvements have been demonstrated with tools including the Questionnaire for Persons with Transfemoral Amputation, Short Form-36 Physical Component Summary, 6 Minute Walk Test, and Timed Up and Go test [10,11].

The specific benefits of osseointegration over socket prostheses include

Better functioning and quality of life: Compared to socket prostheses, osseointegrated prostheses offer improved functioning and quality of life [4,15]. Specifically, those who undergo osseointegration tend to have improved walking proficiency, including the capacity to walk farther distances and for longer periods of time, owing to their ability to wear the prosthetic longer [15]. These patients are reported to have a more normal cadence and duration of gait cycle [10].

More limb sensation: Research on osseoperception, or the ability to identify a tactile stimulus that are transmitted *via* the bone-anchored prosthesis, has shown that perception is superior in osseointegrated prostheses than in socket prostheses [13]. Scientists interpret this finding to suggest that amputees with osseointegrated prostheses may have better kinesthetic awareness and be better able to respond to stimuli presented to their prosthetic limbs. Critically, unlike with other prostheses, people report that osseointegrated prostheses feel like a part of them [17]. This improved pressure and vibrotactile feedback is also associated with a greater freedom of motion [2,18-20].

Fewer abrasions and less pain: Unlike socket prostheses, osseointegration transfers energy directly to the skeleton and thus reduces abrasions [3]. Skin contact, tissue damage, and pain are minimized because the intramedullary metal implant attaches to the prosthetic *via* a small protrusion through the skin [13]. In addition, reported sitting comfort has been shown to be improved [21].

Improved efficiency and durability when using myoelectric prostheses with osseointegration: Osseointegration improves device efficiency because it prevents challenges related to signal transduction between electrodes and myositis [2]. The survival rates of the prostheses are also impressive, with 2-year survival reaching between 92% and 95%. [3,22].

Reduced energy requirements: Osseointegration reduces energy requirements compared to socket prostheses, making donning much easier [7]. The Physiological Cost Index (PCI) has been used to assess energy costs when patients walk with prostheses and has been deemed reliable for patients with lower-limb amputations [23]. The index provides a measure of extra heartbeats per meter of walking. Using this index, it has been shown that patients with osseointegrated prosthesis save more energy compared to those with socket prostheses. Research focused on oxygen requirements

bolsters this notion that osseointegrated prostheses are less energy intensive than the socket variety. These results have shown that the oxygen requirement associated with osseointegrated prostheses is 1,093 mL/min versus 1,330 mL/minute for socket prostheses [24].

Overall, the improved mobility and comfort that come with osseointegrated prosthetic devices increases patient satisfaction and prosthetic use, thus enhancing quality of life [8,10].

The future of osseointegration for amputees

While osseointegration offers clear benefits to amputees, it is a relatively new procedure that suffers from some challenges. For instance, strategic planning and engineering must be implemented for each case of osseointegration to ensure the customized implant is the right size, and if the implant cannot be stably anchored to the bone directly, then the process must be aborted [3]. Osseointegration is associated with a few other risks as well.

Infection, fracture, and reoperation remain challenges in osseointegration

Risk for infection: Osseointegration is associated with an increased risk for soft tissue infection [1,8]. Most infections are caused by common organisms like staphylococcus aureus or coagulase-negative staphylococci and are superficial, resulting in pain, erythema, or discharge [11]. Superficial infections are indeed the most common complication associated with osseointegration but have been shown to respond well to oral antibiotics [4]. Infections that require additional surgeries have been observed to have a risk of only 5% to 8% [10]. Nonetheless, human trials to evaluate the incidence of infection are ongoing [7].

Because the role of the skin is minimized with osseointegration, there is concern that patients may not benefit from the functional barrier that skin provides [13]. The lack of this layer of protection against the external environment may contribute to the increased risk of infection. In response to this concern, researchers are working to develop an environmental seal that could be incorporated into the osseointegration procedure.

Periprosthetic fracture and reoperation: Though there are clear advantages of osseointegration over socket prostheses, concerns have been raised about the potential for osseointegration to lead to cortical bone resorption around the implant, which could potentially cause outbreak fractures or aseptic loosening [15]. Reoperation may be necessary following osseointegration when excessive skin envelopes interfere with the prosthesis [9]. The stretching and loosening of tissues that occurs with time can also interfere with the prosthesis. It is therefore important to consider the soft tissue envelope when performing osseointegration for lower extremity amputations to avoid reoperation.

Ongoing clinical research will help to optimize osseointegration use in the future

Research on osseointegration has elucidated not only the general value and technical details of the procedure but also how the different versions of osseointegration-Branemark's Osseanchored Prostheses for the Rehabilitation of Amputees (OPRA) device and the Compress Transcutaneous Implant (CTI), and the Osseointegrated Prosthetic Limb (OPL) are particularly valuable for

patients whose soft tissue envelopes are compromised or who suffer short residual limbs [2]. The U.S. Food and Drug Administration Humanitarian Use Device designation for osseointegration is likely to spur even more research into the technique, and the resulting data will be invaluable in continually improving upon it and expanding its applications [4,10].

CONCLUSION

Though there are certain challenges associated with osseointegration, progress has been made to address and mitigate some of these issues. For instance, the strict rehabilitation protocols that were established in 1999 appeared to improve failure rates of osseointegrated prostheses. In 2009 when Brånemark and Hagberg presented the results of 100 osseointegrated transfemoral prostheses, they revealed that most of the failure had occurred prior to 1999. Nonetheless, even for the challenges that remain, experts agree that these challenges do not occur at an unacceptably high rate nor are they insurmountable. In addition, as the U.S. Department of Defense is spearheading clinical trials in osseointegration, global interest is likely to increase in coming years, and patients and surgeons alike will benefit from forthcoming knowledge about the technique.

AUTHOR CONSENT

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REFERENCES

1. Paternò L, Ibrahim M, Gruppioni E, Mencias A, Ricotti L. Sockets for limb prostheses: a review of existing technologies and open challenges. *IEEE Trans Biomed Eng.* 2018;65(9):1996-2010.
2. Bates TJ, Ferguson JR, Pierrie SN. Technological advances in prosthesis design and rehabilitation following upper extremity limb loss. *Current Rev Musculoskeletal Med.* 2020;13(4):485-93.
3. Hoellwarth JS, Al Muderis M, Rozbruch SR. Cementing osseointegration implants results in loosening: case report and review of literature. *Cureus.* 2020;12(2).
4. Hebert JS, Rehani M, Stiegelmar R. Osseointegration for lower-limb amputation: a systematic review of clinical outcomes. *JBJS Rev.* 2017;5(10):e10.
5. LaPrè AK, Nguyen VQ, Baspinar U, White M, Sup FC. Capturing prosthetic socket fitment: Preliminary results using an ultrasound-based device. In 2017 Int Conf Rehabil Robot 2017; 1221-1226.
6. Pezzin LE, Dillingham TR, MacKenzie EJ, Ephraim P, Rossbach P. Use and satisfaction with prosthetic limb devices and related services. *Arch Phys Med Rehabil.* 2004;85(5):723-9.
7. Kistenberg RS. Prosthetic choices for people with leg and arm amputations. *Phys Med Rehabil Clin N Am.* 2014;25(1):93-115.
8. Kunutsor SK, Gillatt D, Blom AW. Systematic review of the safety and efficacy of osseointegration prosthesis after limb amputation. *Br J Surg.* 2018;105(13):1731-41.
9. Marano AA, Modiri O, Rozbruch SR, Otterburn DM. Soft tissue contouring at the time of osseointegrated implant reconstruction for lower extremity amputation. *Ann Plast Surg.* 2020;85(S1):S33-36.
10. Hoellwarth JS, Tetsworth K, Rozbruch SR, Handal MB, Coughlan A, Al Muderis M. Osseointegration for amputees: current implants, techniques, and future directions. *JBJS reviews.* 2020;8(3).
11. Overmann AL, Forsberg JA. The state of the art of osseointegration for limb prosthesis. *Biomed Eng Lett.* 2020;10(1):5-16.
12. Hagberg K, Brånemark R. Consequences of non-vascular trans-femoral amputation: A survey of quality of life, prosthetic use and problems. *Prosthet Orthot Int.* 2001;25(3):186-94.
13. Laferrier JZ, Gailey R. Advances in lower-limb prosthetic technology. *Phys Med Rehabil Clin N Am.* 2010;21(1):87-110.
14. Lichtblau C, Hennekens CH. Osseointegration: A Novel Technology for Amputees. *Int J Phys Med Rehabil.* 2018;6(5):48
15. Haket LM, Frölke JP, Verdonschot N, Tomaszewski PK, van de Meent H. Periprosthetic cortical bone remodeling in patients with an osseointegrated leg prosthesis. *J Orthop Res.* 2017;35(6):1237-41.
16. Mioton LM, Dumanian GA. Targeted muscle reinnervation and prosthetic rehabilitation after limb loss. *J Surg Oncol.* 2018;118(5):807-14.
17. Lundberg M, Hagberg K, Bullington J. My prosthesis as a part of me: a qualitative analysis of living with an osseointegrated prosthetic limb. *Prosthet Orthot Int.* 2011;35(2):207-14.
18. Jönsson S, Caine-Winterberger K, Brånemark R. Osseointegration amputation prostheses on the upper limbs: methods, prosthetics and rehabilitation. *Prosthet Orthot Int.* 2011;35(2):190-200.
19. Jacobs R, Brånemark R, Olmarker K, Rydevik B, Steenberghe DV, Brånemark PI. Evaluation of the psychophysical detection threshold level for vibrotactile and pressure stimulation of prosthetic limbs using bone anchorage or soft tissue support. *Prosthet Orthot Int.* 2000;24(2):133-42.
20. Hagberg K, Brånemark R, Gunterberg B, Rydevik B. Osseointegrated trans-femoral amputation prostheses: prospective results of general and condition-specific quality of life in 18 patients at 2-year follow-up. *Prosthet Orthot Int.* 2008;32(1):29-41.
21. Hagberg K, Häggström E, Uden M, Brånemark R. Socket versus bone-anchored trans-femoral prostheses: hip range of motion and sitting comfort. *Prosthet Orthot Int.* 2005;29(2):153-63.
22. Brånemark R, Berlin Ö, Hagberg K, Bergh P, Gunterberg B, Rydevik B. A novel osseointegrated percutaneous prosthetic system for the treatment of patients with transfemoral amputation: A prospective study of 51 patients. *Bone Joint J.* 2014;96(1):106-13.
23. Hagberg K, Hansson E, Brånemark R. Outcome of percutaneous osseointegrated prostheses for patients with unilateral transfemoral amputation at two-year follow-up. *Arch Phys Med Rehabil.* 2014;95(11):2120-7.
24. Van de Meent H, Hopman MT, Frölke JP. Walking ability and quality of life in subjects with transfemoral amputation: a comparison of osseointegration with socket prostheses. *Arch Phys Med Rehabil.* 2013;94(11):2174-8.



Physiatrist's Voice

NEWSLETTER

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Prosthetic Sockets and Suspension Systems

Craig H. Lichtblau, M.D.

The prosthetic socket is the primary and critical interface between an amputee's residual limb and the rest of the prosthesis. A good comfortable fit is required to insure positive outcome. The socket has to be efficiently fitted, have adequate load transmission and he needs to insure stability and control.

Many patients with amputations stop wearing their prosthesis and a major cause is socket-related problems which include, but is not limited to poor fit, poor body mechanics and reduced control. The process of making a socket begins with taking measurements in a negative cast of the residual limb. The cast is filled with plaster to create a positive mould.



The positive mould is then modified to optimize the socket fit. This process is called "rectification". The socket is then laminated using carbon and resin to create the custom socket. This is referred to as the "definitive socket". A check/test/diagnostic socket is sometimes fabricated before creating the definitive socket (this socket is usually transparent allowing the clinician the complete view to evaluate and fit and make changes).

Multiple fittings are at times necessary to assure the best possible design with a comfortable and effective fit. Because it is the interface between the device and residual limb the quality of the socket design, whatever the model used, is key and decides on user's comfort and his/her ability to control the appliance. The user will never walk properly and will never reach the agreed goal of the rehabilitation plan if the quality of the socket fit is not satisfactory regardless of the material used (plastic, resin, or carbon).

The quality of the fit depends entirely on the work of the prosthetist and his/her capacity to insure precise measurements during the casting and suitable rectification of the positive mould to distribute force over the socket where needed. This would include:

- Polypropylene technology developed by the International Committee of the Red Cross which is used all over the world, especially in resource-limited countries and projects by the ICRC. Polypropylene is used in the United States also as an alternative to laminating a definitive socket. It is cheaper than laminating, but can be just as durable.



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Prosthetic Sockets and Suspension Systems

Craig H. Lichtblau, M.D.

- The Modular Socket System developed by Ossur can be used to make a socket directly on the patient's residual limb. It is an easier and quicker process but the cost is higher. Delivery time to the patient could be within one day. This is currently available for transtibial amputees.
- A more sophisticated and expensive technique utilized today is the CAD system (Computer Aided Design). With the improvement of technology 3D printed sockets are also gaining momentum.
- Adjustable sockets are gaining more popularity such as the RevoFit2 Adjustable Socket.

The socket applies external forces over the surface of the residual limb. The amount and location of their application and the means that control those forces contribute to the impact the prosthesis has on mobility and function and acceptance of the device. Pressure distribution over a greater surface diminished the load and provides more comfort during the use of the prosthesis

Although the majority of the stump areas are considered as pressure tolerant. Some are very sensitivity and cannot support any pressure. Sockets design should allow forces to be distributed over a large residuum surface area as possible and should be applied as evenly as possible over pressure tolerant areas. These pressure tolerant areas might turn red that will subside when the prosthesis is taken off, but no desk breakdown occurs.

Pressure-sensitive areas have a high probability of skin breakdown occurs. No redness should occur in the pressure-sensitive areas. Knowing these areas will help the therapist to know where some redness is normal in a properly fitted socket. When redness occurs at the pressure-sensitive areas, the therapist should consult with the prosthetist.

Transtibial Sockets

Patellar Tendon Bearing (Socket PTB)

The weight bearing takes place below the patella at the patellar tendon. The suspension is generated by a belt that is tightened around the distal part of the thigh. The tension of the belt limits the blood and lymphatic circulation; moreover, after long term use results in muscle atrophy and other related problems

Patellar Tendon Bearing Supracondylar (PTB SC)

The weight bearing takes place below the patella at the patellar tendon. The suspension is generated at the medial and lateral areas of the femoral condyles. Compared to the PTB socket with belt



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Prosthetic Sockets and Suspension Systems

Craig H. Lichtblau, M.D.

suspension, this design does not produce problems of blood circulation or atrophy. For the moment, this type is used worldwide as most basic design for prosthetic fitting of medium and long stumps.

Patellar Tendon Bearing Supracondylar Suprapatellar (PTB SC SP)

This weight bearing takes place below the patella, at the patellar tendon. The suspension is generated at the medial and lateral areas of the femoral condyles and at the suprapatellar area. This type is indicated for short stumps, as well as in cases of antero-posterior instability in the knee.

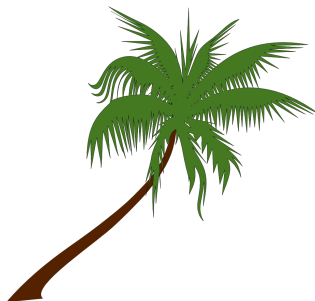
Indications

Primary Amputees – the PTB socket is good for primary amputees as the socket can be modified to accommodate the changes in the residual limb that occur for 12-18 months after the amputation.

- Sensitive Residual Limbs – If the amputee has a particular area of sensitivity on their residuum it is possible in a PTB socket to relieve these areas more easily than in a total surface bearing socket.
- Bulbous Residual Limbs –The construction of a PTB socket, an inner liner and outer hard socket, allows for build-ups to be applied to the inner liner allowing easier donning and doffing for an amputee with a bulbous residual limb.
- Poor Hand Dexterity/Poor Eyesight/Hemiparesis – PTB sockets are much easier to don/doff than total surface bearing sockets.

Contraindications

- Active amputees can find the PTB trim lines and suspension methods too restrictive, especially with regards to knee flexion.
- Some amputees can find the PTB prosthesis pistons (lines up and down during the gait cycle).





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Dr. Paule's EMG Case of the Quarter

Reason for Referral

Right hand tremors

Brief Patient History

The patient is a 47-year-old female who presents for electrodiagnostic testing of the right upper limb to evaluate her complaints of right hand tremors. There is no history of weakness, underlying neck pain, arm pain or numbness. Her symptoms began gradually over the past six months, and everyone thinks that she's faking it for attention. Her next office visit is to a psychiatrist as she has already had two negative EMGs. Electrodiagnostic testing is requested to evaluate for focal neuropathy.



Paulette Smart-Mackey MD

Patient's medical history, surgical history, social history, family history, review of systems, allergies, medications, and medical reports were reviewed as documented on the patient's clinical history form within the medical record.

Focused Neuromuscular Exam

Focused neuromuscular exam reveals a pleasant female, who sits on the examination table in no acute distress. She is alert and oriented with fluent coherent speech. There is grade 5 upper limb muscle strength except for slightly diminished power with right index finger abduction when compared to the left. There is good scapular mobility without winging. Sensation is intact to light touch and pinprick throughout. Cervical, shoulder, elbow, wrist, hand, and finger range of motion are within functional limits bilaterally. Tinel's is negative at the palmar wrist and medial elbow groove. Tone is normal. There is no evidence of spasticity.

NCS Data Motor

- R Radial Motor (EIP)
 - LAT 2.2 ms; AMP 6mV
 - NCV of 56 m/s (forearm), 57m/s (arm)
- R Median Motor
 - LAT 3.3 ms, AMP 7mV
 - NCV of 59 m/s



Physiatrist's Voice

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Dr. Paule's EMG Case of the Quarter *-continued-*

R Ulnar Motor (FDI)

LAT 5.2 ms, AMP 2.3mV

NCV of 55 m/s (BE), 50 m/s (AE) & 51 m/s (Ax)

R Ulnar Motor (ADM)

LAT 2.8 ms, amp 8mV

NCV of 55 m/s (BE) & 50 m/s (AE) & 51 m/sec (Axilla)

NCS Data Sensory

R Radial Sensory (Dig 1, 10 cm)

PEAK LAT 3.4 ms (<3.9ms), AMP 32 uV

R Ulnar Sensory (Dig 5, 14 cm)

PEAK LAT 3.4 msec (<3.9ms), AMP 26 uV

R Median Sensory (Dig 3, 14 cm)

PEAK 3.2 ms, (<3.9ms), AMP 42 uV

Summary of Nerve Conduction Studies

The right median motor and sensory nerve conduction profiles are normal.

The right radial motor and sensory nerve conduction profiles are normal.

The right ulnar motor nerve conduction profile is normal to the ADM.

The right ulnar motor nerve conduction profile is abnormal to the FDI. The nerve conduction time is delayed across the wrist and the amplitude is diminished when compared to the ADM response.

The right ulnar sensory response is normal.

Needle Electromyogram Data and Summary

Patient consented to the needle EMG study of several muscles throughout the right upper limb. A 37 mm 25-gauge monopolar needle electrode was utilized without complications.

The following muscles were sampled: Deltoid (C56, axillary), Biceps (C56 musculocutaneous), Triceps (C678, radial), Flexor Carpi Radialis (C56, median), Flexor Carpi Ulnaris (C78, ulnar), Ext Dig Com (C78, radial), APB (C8T1 median), ADM (C8T1, ulnar), FDI (C8T1, ulnar), lower cervical paraspinals.

Membrane irritability in the form of 2+ positive sharp waves and fibrillation potentials were present within the right first dorsal interosseous, with polyphasic motor units of increased amplitude, increased duration, and decreased recruitment pattern.

Membrane irritability, spontaneous potentials, or acute denervation were otherwise absent in the remainder of the right upper limb regions tested.

What is the most likely diagnosis?



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Dr. Paule's EMG Case of the Quarter *-continued-*

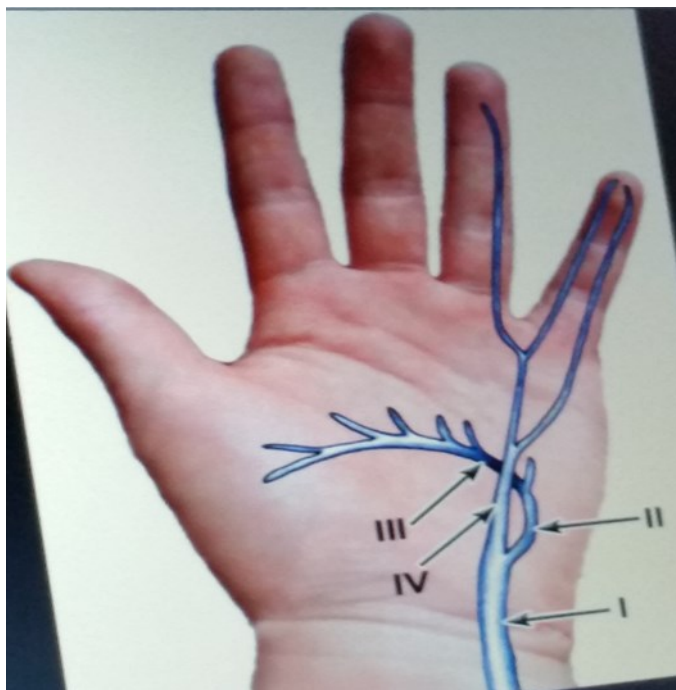
- a. Ulnar neuropathy across the wrist
- b. Ulnar neuropathy within the right forearm
- c. Ulnar neuropathy across the elbow
- d. Ulnar neuropathy within the right arm
- e. Other

(See answer below in the interpretation)

Questions to ponder as you write your EMG report

- a. Are you satisfied with your EMG exam, data analysis, and report design?
- b. Does your EMG/NCS data match your diagnosis?
- c. Did you answer the referring physician's question (s)?
- d. Did you answer the patient's questions?
- e. Did you address severity, acuity, location, and outcome in your impression/interpretation?
- f. Any other pertinent findings to relay to your referral source?

(See interpretation for answers)





Physiatrist's Voice

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Dr. Paule's EMG Case of the Quarter *-continued-*

Report Analysis

The diagram above reveals four areas of possible compromise of the ulnar nerve as it crosses the wrist and branches out to the hand. There may be involvement of the main ulnar nerve branch which is a mixed motor and sensory nerve at the wrist crease (I). There may be involvement of the recurrent motor branch (II), or branch to the ADM. There may be involvement of the motor branch to the FDI (III), and there may be involvement of the sensory branch to the fourth and fifth digits (IV).

This patient had a chondrosarcoma of the hamate bone at the wrist that affected only the ulnar motor nerve branch to the first dorsal interosseous muscle. The abductor digiti minimi and sensory branches were spared. The dorsal ulnar cutaneous sensory branch was also spared.

*The take home point is **never neglect to study the first dorsal interosseous muscle with ulnar nerve evaluations. It is vital in studying the distal ulnar motor nerve branches. I also find it very sensitive when trying to localize ulnar nerve lesions across the elbow.***

Interpretation of EMG/NCS Findings

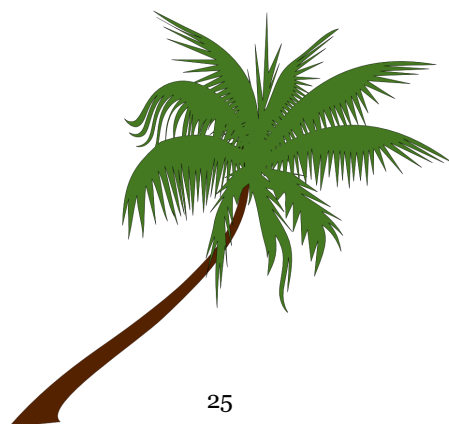
The right upper limb electrodiagnostic study is abnormal.

There is EMG evidence of a **severe, chronic, right ulnar neuropathy at the wrist** (Guyon's canal), distal to the innervation of the abductor digiti minimi (ADM) and the digital sensory fibers.

The **first dorsal interosseous (FDI) fibers are most involved** with chronic neuropathic features and ongoing denervation. The ADM and sensory fibers are spared. The **prognosis** for ongoing recovery is fair.

There is no evidence of a right median or radial neuropathy.

There is no evidence of a more generalized polyneuropathy, right cervical radiculopathy, or plexopathy.





Physiatrist's Voice

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Recent Worker's Compensation Court Order Regarding Pain Specialists

Marc Gerber MD, FSPMR Board of Directors, Member-at-Large

I testified recently before a worker's compensation judge regarding a case brought before the court. The case was whether a PMR board certified pain specialist is the same as an Anesthesiology board certified pain specialist.



A patient who was being treated by a pain specialist, whose background was anesthesiology, requested a one-time change. The adjuster wanted the patient to see me. Opposing counsel, representing the patient, wanted the patient to see someone else of their choosing and argued that I was not the same as someone whose background was in anesthesiology. This became a big legal issue between the plaintiff and defense over the course of a year.

The plaintiffs argued that despite the fact we are both board certified in Pain Medicine, we are not the same. I had to first give a deposition, and then later testify in court. Several other doctors who treated the patient also gave depositions and the original pain doctor who is anesthesia trained, whom I have known locally for many years, also stated that we are the same in terms of the specialty of pain medicine.

The final order on August 3, 2022, stated that we are the same, and that being an ACGME, Board Certified Pain Medicine Specialist, by way of training and or fellowship means that we have the same education, knowledge and focus of practice in the area of Pain Medicine.

The judge further explained that by not adopting this ruling, it would complicate and interfere with the care of an injured worker in that the employer/carrier may not be able to find someone with the same background training and subsequent board certification locally. He also stated that if a doctor held multiple board certifications, such as Neurology and Anesthesiology followed by a board certification in Pain Medicine, it may be impossible to find someone with the exact background training and subsequent board certifications and thus would interfere with the care of an injured worker. Based on education, experience, training, skill, focus of practice and exam qualifications, as long as the prior doctor and new doctor satisfy this definition of specialty, then they would be considered the same specialty (i.e. Pain Medicine). Judge Arthur presented a nice discussion of why the defense's argument is upheld and what it would mean to the state if the plaintiffs prevailed.

This case will likely establish precedence for any similar arguments in the future. I took great interest in this case as it was very important for PMR pain specialists. If the plaintiffs prevailed, it would be very problematic for those of us who see work comp patients. Attorneys could then seek out whoever they wanted and interfere with the ability of PMR trained pain specialists to see patients. The judge, luckily, was very interested to hear what I had to say. I prepared information in a clear and concise manner. Many times in court an expert has to explain and educate a judge and or jury. They are not medically trained and we cannot assume they understand what we take for granted. I testified for about a half hour. I presented information from the ACGME, ABPMR and AAPMR regarding what is Pain Medicine as a sub specialty, and what it means to be board certified. The fact that we all take the same exam administered through the ABA and have the same fellowship training, regardless of background training, was very important to explain to the judge.

If any members have any questions or would like the final order please contact me at mgerber2@cfl.rr.com.



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WELCOME

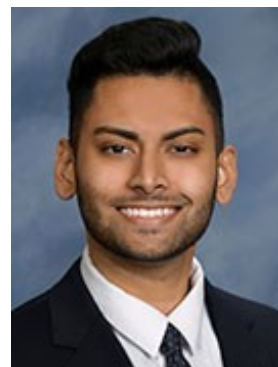
FSPMR RESIDENT LIAISONS



**Liaison,
University of
Miami PM&R
Residency Program**
Lauren Cuenant DO



**Liaison,
Larkin Palm Springs
PM&R
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Shawn Haynes MD



**Liaison,
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Arun Zachariah DO



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September 2022

UCF/HCA/FL W Hospital PM&R Residency Program
Zeeshan Haque, MD PGY-2

Hello all,

I hope you have all had an excellent start to your new academic year. Our interns are now one month in to their new academic year and have been enthusiastic to finally get to work as PM&R residents. We also had an excellent GME welcome party during which our residents got to meet & socialize with faculty members and residents from our own as well as the other residency programs at our hospital!

We'd like to congratulate Dr. Gill (PGY-3) and Dr. O'Leary (PGY-3) on giving an excellent interesting case presentation at the recent annual FSPMR meeting! It was a great experience for them to meet and network with PM&R physicians from all over the state of Florida.



Zeeshan Haque MD

Furthermore, our PM&R program family has continued to grow! We would like to welcome Dr. Harris as our new PM&R residency faculty member. Dr. Harris did his PM&R Residency training with the University of Michigan. Dr. Harris is leading our hospital's PM&R consult service. Also, both Dr. Tran (PGY-3) and Dr. O'Leary (PGY-3) have gotten engaged over the past few months. In addition, our program director, Dr. Belcher, has also welcomed in a new baby boy.

Our new GME state-of-the-art simulation lab has been built and is almost ready for our residents to use. The simulation lab will provide an excellent learning opportunity for our residents to build on their procedural skills.

Dr. Gill and myself will be participating in the Emerging Leaders in Spasticity program to continue improving our knowledge and skillsets in order to provide the best care we can when treating patients with spasticity.

With that, I'd like to wish you all continued success throughout this academic year and beyond!

Best Regards,

Zeeshan Haque, MD
PGY-3



Physiatrist's Voice

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UCF/HCA/FL W Hospital PM&R Residency Program
Zeeshan Haque, MD PGY-2 continued

UCF/HCA Florida West Hospital PM&R Residency Program

UCF/HCA PM&R Program
Faculty, Residents,
Family Members at our
UCF/HCA GME Welcome Party



Drs Sean O'Leary and Himat Gill (far L, far R)
Resident Case Presenters at the Annual Meeting
with Dr Jeff Buchalter, Associate Professor, UCF



Physiatrist's Voice

NEWSLETTER

September 2022

University of Miami Miller School of Medicine/Jackson Memorial Hospital PM&R
Residency Update

Lauren Cuenant DO , RESIDENT LIAISON
Chane Price MD, PM&R Residency Program Director

Dear Colleagues,

It is a great honor to introduce myself as the University of Miami/Jackson Memorial Hospital PM&R Liaison. What a pleasure it was to meet you all in person at the annual FSPMR conference!

This year, myself and Dr. Oliver Acosta had the privilege of presenting our case: "An Unexpected Rehabilitation Course in a Medically Complex Patient." Though we did not win, we had an excellent discussion with our audience regarding patient care during inpatient rehabilitation. We also enjoyed learning from the variety of cases presented by our colleagues.



Lauren Cuenant DO

Of course, a great highlight of the weekend was watching Dr. Andrew Sherman, professor and Vice Chair of Education at our program, accept his new role as FSPMR president. We are excited for what the future holds as he leads the charge in promoting PM&R amongst current and upcoming generations of physiatrists.

On a heavy note, I would be amiss if I did not mention the passing of our esteemed professor and Chairman of Physical Medicine and Rehabilitation at the University of Miami Miller School of Medicine, Dr. David R. Gater.

Dr. Gater also served as the Chief Medical Officer of rehabilitation at the Christine E. Lynn Rehabilitation Center, Co-Principal Investigator of the University of Miami SCI Model Systems research grant, and President of the Academy of SCI Professionals. He was a leader in our field and a great loss to the community.

In his honor, my fellow residents and I look forward to competing in the annual FPM&R Rehab 5k Run/Walk & Roll and AAPMR Resident Quiz Bowl.

As the year evolves, I am excited to share our program's new developments and hear from the other liaisons!

Cheers,

Lauren Cuénant, PGY-3
Physical Medicine and Rehabilitation
University of Miami/Jackson Memorial Hospital



Physiatrist's Voice

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University of Miami Miller School of Medicine/Jackson Memorial Hospital PM&R
Residency Update

Lauren Cuenant DO , RESIDENT LIAISON

Chane Price MD, PM&R Residency Program Director

Continued



Resident Case Presentation: Drs Lauren Cuenant and Oliver Acosta





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Larkin Palm Springs Campus PM&R Residency Program
Franz Richter MD, Program Director
Shawn Haynes MD, Resident Liaison

Larkin Community Hospital Palm Springs Campus PM&R Residency Program
Shawn Haynes, MD PGY-2
FSPMR Resident Liaison

Greetings, my name is Shawn Haynes and I am representing a new addition to the FSPMR community. I am proud to introduce the Larkin Community Hospital Palm Springs Campus PM&R Residency Program! We are happy to have the opportunity to join the growing community of physiatrists in Florida. We have just completed our first year as a program and are welcoming an incoming class of 2026:



Shawn Haynes MD

Edward Dudley-Robey, MD - University of Science, Arts & Technology (USAT) Faculty of Medicine
Alejandra Garrido, MD - Universidad del Norte Programa de Medicina
Kimberly Gaston, MD - University of Health Sciences Antigua School of Medicine
Marvin Guillen, MD - Universidad Dr. José Matías Delgado Escuela de Medicina
Arshi Handa, MD - Poznan University of Medical Sciences Center for Medical Education In English
James Jennings, MD - Universidad Iberoamericana (UNIBE) School of Medicine, Santo Domingo
Stephanie Lau, MD - American University of Antigua College of Medicine
Manuel Orozco, DO - Philadelphia College of Osteopathic Medicine, Georgia Campus

And introducing our PGY2 class of 2025:

Shawn Haynes, MD - Ross University School of Medicine
Trevor Jackson, DO - Kansas City University of Medicine & Biosciences College of Osteopathic Medicine
Roshani Patel, DO - Arkansas College of Osteopathic Medicine
Smriti Sharma, MD - Bharati Vidyapeeth Medical College, Pune
Erum Usman, MD - Windsor University School of Medicine
Danielle Simpson, MD - American University of Antigua College of Medicine
Rosa Garcia, MD - Universidad Iberoamericana (UNIBE) School of Medicine, Santo Domingo
James Michael, MD - St. George's University School of Medicine

Our PGY3 Class of 2024:

Amanda Barrial, MD - Universidad Iberoamericana (UNIBE) School of Medicine, Santo Domingo
Emiliano Curia, MD - Universidad de Buenos Aires Facultad de Medicina
Neel Jingar, MD - Rutgers New Jersey Medical School
Benjamin Kestenbaum, DO - New York Institute of Technology College of Osteopathic Medicine
Rodrigo Salas, MD - Universidad del Zulia Facultad de Medicina

We also would like to formally welcome Dr. Colleen Neubert as an acute inpatient rehabilitation attending. She completed her undergraduate degree in biological sciences at Florida International University, her Doctorate of Osteopathy at West Virginia School of Osteopathic Medicine, and her residency at Larkin Community Hospital PM&R program. She will focus on developing our inpatient education and play a critical role in developing our EMG program.



Physiatrist's Voice

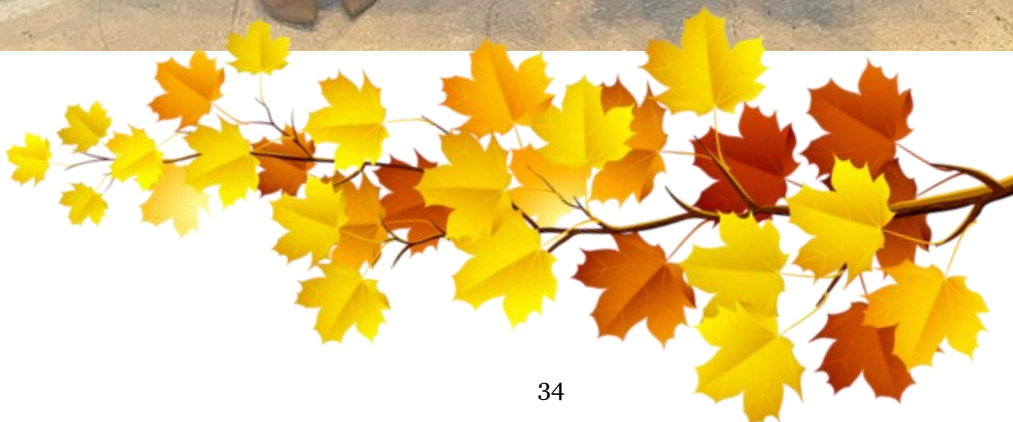
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Larkin Palm Springs Campus PM&R Residency Program

Shawn Haynes MD—continued

We opened the upcoming year with a great wellness experience and opportunity to bond as a program during an outing at TopGolf. This gave us the chance to kick off our mentorship program that will allow our new residents the time to learn from our seniors and to accelerate their personal and professional development. This will help all our residents achieve their goals by providing guidance, advice, and feedback about experiences in the program and the specialty.





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Larkin Palm Springs Campus PM&R Residency Program

Shawn Haynes MD—continued





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University of South Florida PM&R Residency Update

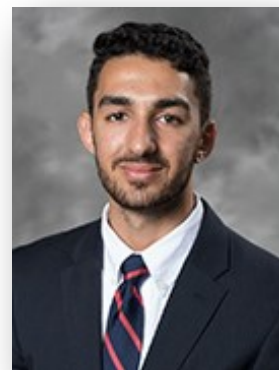
Kareem Qaisi DO, Resident Liaison

Marissa McCarthy, MD, Residency Program Director

Greetings from sunny Tampa Bay!

Thank you FSPMR for holding such a fantastic conference last month. It was great meeting everybody and such a great experience to embrace the world of physiatry here in Florida. Already looking forward to seeing everyone again next year!

Dr. Wilhelm and I were glad to present on a case of Neuro-Behcet's syndrome during the resident case presentations. Our very own residency program director, Dr. McCarthy, also had a fantastic presentation on mild traumatic brain injury. Again, we are all very thankful for the opportunity.



Kareem Qaisi DO

We are happy to have visiting students start rotating with us again this academic year at the James A. Haley VA Hospital. It is a privilege to mentor and educate those upcoming and interested in the field of physiatry. We look forward to the upcoming application cycle!

Kareem Qaisi, DO
Resident Physician | PGY-3
University of South Florida
Physical Medicine & Rehabilitation





Physiatrist's Voice

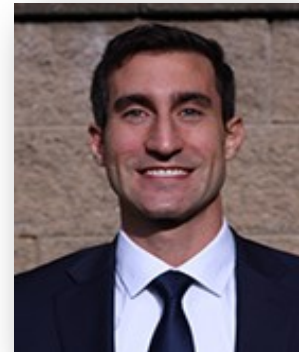
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UNIVERSITY OF FLORIDA
MICHAEL BROWNSTEIN MD, RESIDENT LIAISON
Andrew H Dubin MD, UF PM&R Residency Director

Greetings from Gainesville!

A huge shout out to everyone who represented UF at FSPMR in Tampa this year! We hope you were able to hear presentations from PGY-3 Dr. Shammi Patel who presented a case on post-traumatic focal dystonia, Dr. Carolyn Geis who served on the telemedicine roundtable, and Dr. Jason Zaremski who discussed the role of ultrasound in the diagnosis and treatment of pediatric sports injuries.



Michael Brownstein MD



Back in Gainesville, we are excited to announce that we have several new faculty members joining the gator nation. One of whom has just recently started - Dr. Ady Correa Mendoza! She is originally from Puerto Rico where she completed both medical school and PM&R residency. She is now here with us at UF after finishing her cancer rehabilitation fellowship in Miami. In addition to cancer rehabilitation, her clinical interests include lymphedema management, musculoskeletal medicine, and neurotoxin application.



We are thrilled that Dr. Andrew Dubin has risen to Vice Chair of Education, and Dr. Irene Estores has taken over as our new residency Program Director. Additionally, Dr. Jason Zaremski was appointed as the inaugural Chief of the department's Division of Sports Medicine within our new



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UNIVERSITY OF FLORIDA

MICHAEL BROWNSTEIN MD, RESIDENT LIAISON

Andrew H Dubin MD, UF PM&R Residency Director

-continued-

Sports and Exercise Medicine Program. Check out his recent August 2022 PM&R journal contribution - "Forearm flexor injury associated with medial ulnar collateral ligament injury in throwing athletes." We are excited to see what everyone will accomplish in their new roles!

Our residents are making some headlines as well. PGY-3 Dr. Caroline Fryar was selected to volunteer at the Gymnastics Athlete Recovery Center at USA Gymnastics National Championships in Tampa.

Some of our faculty and residents "learning" with fun new virtual reality technology for botulinum toxin injections, and various wellness outings:





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UNIVERSITY OF FLORIDA

MICHAEL BROWNSTEIN MD, RESIDENT LIAISON

Andrew H Dubin MD, UF PM&R Residency Director

-continued-



For more updates be sure to follow our Instagram @ ufl_pmr_residency. Until next time!



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Memorial Healthcare System PM&R Residency Program

Incoming, PM&R Resident Liaison Dr. Kevin John
Outgoing, PM&R Resident Liaison, Dr. Yvette Little
Jeremy Jacobs DO, Residency Program Director



Dr. Yvette Little

PM&R Residency Program Update

Hello, FSPMR family! Its Dr. Yvette Little. Below are exciting updates we have to share with you. I also wanted to mention that this will be my last newsletter. It has been a great experience being the resident liaison for MHS. We like to keep this position for PGY2s. Therefore, I would like to introduce Dr. Kevin John who will be the new resident liaison. We worked together to give you this newsletter. Hope you enjoy!

Most recently, Memorial Healthcare System held our 6th Annual Adaptive Sports & Recreation BOWL-A-THON. This is an annual event that MHS hosts to benefit the Memorial Rehab Adaptive Sports and Recreation Program which helps provide recreational and athletic experiences for those with physical disabilities for all ages. It was such a great time and experience. Pictures below.



Dr. Kevin John

Some of our residents recently attended the FSPMR Conference which was such a great learning experience. Two of our PGY3's, Dr. Yvette Little and Dr. Amanda Hargrove, made a case presentation at the conference: "HSV/EBV Reactivation in a Patient with GBS Syndrome Secondary to COVID-19".

Two of our PGY4s also recently had poster presentations. Dr. Uday Mathur presented "A Gang of Knee Pain" at the AMSSM Conference. Dr. Matthew Voelker presented "A Frequency for Urinary Retention: When Spinal Cord Stimulation holds pain and Water" at the ASPN Conference.

We are also very excited for our PGY4s who have all applied for fellowships. Congrats to Dr. Matthew Voelker who was offered an Interventional Spine and Pain Management fellowship position with Dr. Anthony Giuffrida, located in Fort Lauderdale's Cantor Spine Center at the Paley Orthopedic & Spine Institute. We are very excited for him! In addition, Dr. Uday Mathur has applied to Sports Medicine. Dr. Andres Gutierrez and Dr. Robert Mousselli have both applied to Pain Medicine. We can't wait to see where they match!

Now that schools have officially started back up, we have resumed our sports physicals at different local universities and soon will start back up with our physician sideline coverage. We are very fortunate to have this sports medicine experience and learn what it entails to be a team physician.

Pictures of some of our most recent events.





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Memorial Healthcare System PM&R Residency Program

Dr Yvette Little PM&R Resident Liaison to FSPMR

Jeremy Jacobs DO, Residency Program Director





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Memorial Healthcare System PM&R Residency Program

Dr Yvette Little PM&R Resident Liaison to FSPMR

Jeremy Jacobs DO, Residency Program Director





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LARKIN COMMUNITY HOSPITAL PM&R RESIDENCY UPDATE

ARUN ZACHARIAH DO, Liaison

Jose J. Diaz, DO, Residency Program Director

Hello from Larkin Community Hospital! I hope everyone is adjusting to the new year. Congrats to all of the of PGY4s who recently matched, I'm sure everyone will excel! One of our chiefs, Anish Soni, matched at Texas Spine and Scoliosis.

Some exciting news, my co-residents, Megan McGuire and Rick Morgan recently won best case presentation at FSPMR, congrats guys, keep up the good work!



Arun Zachariah DO





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Professional Opportunities

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Professional Opportunities



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**Deadline for our next issue, is November 15th
for our December 2022 Newsletter**

Guidelines for your articles are available on the website: [FSPMR.org/newsletters](https://www.fspmri.org/newsletters) Here a few for your convenience;

- Pictures: should be in .jpg or .gif format. All files must have minimum resolution of 72 dpi. (max. 300) with a image size no larger than: 1500 px x 900 px
- Documents should be submitted in electronic format (.docx). If a PDF is to be submitted, each page must be submitted separately.
- All articles will be approved by Web site committee editors.
- FSPMR will retain full editorial rights to any submissions.

Articles in this newsletter are not an endorsement of nor an acceptance by the Florida Society of Physical Medicine and Rehabilitation. They are published as a service to the author for the benefit of members. This is not a scientifically peer reviewed publication.



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