The Radiographer

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Melissa Hart, MHA RT (R)(M), Editor

The Missouri Society of Radiologic Technologists was founded in 1931, chartered as a professional and scientific society dedicated to education, communication and patient care.

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www.mosrt.org

From the President…

Greetings MoSRT professionals!

I hope this letter finds each of you re-charged and energized from National Radiologic Technology Week. We at the MoSRT hope that you celebrated, educated and enjoyed *your* special week.

Great news! The Missouri Society has been chosen by the ASRT as the first recipient affiliate to a part of the Affiliate Advocacy Program (AAP). This is a program that assists affiliates with advocating for their profession on the state level. The MoSRT is very excited be working with the ASRT to promote our LAC activities and assist technologists with advocacy efforts in the state of Missouri. Thank you ASRT!

The board of directors came together in September for our annual board retreat and was able to plan, organize and brainstorm for the future of MoSRT. It was exciting and exhausting! I want to personally and publicly thank the board for allowing me to push them so hard at the meeting. We got a lot accomplished and are preparing for some great offering in the future.

It is with great pleasure that I would like to recognize new board members contributing their talents to the success of the MoSRT. Tim Hill RT(R)(CV) CIIP is joining the MoSRT as our conference audio-visual expert. Rodney Fisher MS RT(R)(NM)(CT)CNMT will serve as registration co-chair, Love Lah RT(R) is student activities co-chair, Kate Leshkova RT(R) is ways and means co-chair and William Oller RT(R)(CT) is the MoSRT technology assistant. Not new to the board but new as a technologist, Casey Scott RT(R), our previous student intern, has selected to continue her service to the MoSRT by serving as student intern co-chair and mentor. Please join me in welcoming these new volunteers to our organization. We cannot prosper without the help of our wonderful volunteers. If you are interested in helping *your* professional organization, please contact me anytime at kelley.mcdonald@mosrt.org to discuss the possibilities.

It's time to start making reservations for the Missouri Society of Radiologic Technologist's Annual Conference, April 2-5, 2014 in Columbia, MO. We have a great line-up of speakers and reduced room rates!

My final comment: If you share our interest in preserving and protecting the profession and as a result, your career, please join our legislative efforts, like RT in JC, February 12, 2014. This event will let the lawmakers in Jefferson City know that we are serious about protecting the patients of Missouri. Also, stay tuned to emails and website information on when you can contact your local lawmakers about this important issue.

Warm winter regards,

Kelley McDonald, MS RDMS RVT RT(R)

From the Student Interns

Taylor Dixon

I could not be more excited for this upcoming conference and everything we have in store for all of the participants! Kelsey Fellows [co-student intern] and I have been working hard to spread the word about our position to Missouri's Radiologic Technology schools. On my end, I have traveled to Springfield and spoken to students at Cox College and Mercy Hospital. I have also spoken to students at Rolla Technical Center, Mizzou, and Linn State Technical College – with help from Kelsey.

Kelsey and I have tried to incorporate more student activity ideas for this upcoming conference. We are also working on projects for when conference gets a little closer to add some friendly new competition!

I could not be more excited to say that the MoSRT has provided Kelsey and me with the opportunity to travel to Washington, D.C. to experience RT in DC this upcoming spring! This will provide us with more tools for mentoring the upcoming interns about our love for our profession! I wish all of the applicants for the student internship good luck, and Kelsey and I can't wait to see all of you in Columbia!

Sincerely,

Taylor Dixon

Student Intern, Rolla Technical Center

Kelsey Fellows

This fall, I was privileged to visit Linn State Technical College and Mizzou's Radiology Program along with [co-student intern] Taylor Dixon. I've also spoken with Southeast Missouri Hospital College of Nursing and Health Sciences, Mineral Area College, and Jefferson College.

I'm pleased to say that all of the students I have talked to have seemed enthusiastic – not only about the Student Internship Program, but also about the C.A.R.E. Bill. Hopefully this will create a good turn out for the R.T. in J.C. event this coming spring with even more students participating than in the past.

I love being able to visit with people from all across that state with Taylor. It's truly a blessing to spread the word about the C.A.R.E. Bill and participate in such an important and meaningful aspect of not only my life, but the lives of everyone in this profession.

To the student intern applicants: I wish you the best of luck! It truly is a reward to become a part of the MoSRT and I can't wait to lead you to follow in my footsteps. Next year I only hope I can be half the mentor that Casey Scott (previous student intern) was to me. I will be glad to help with anything I can. If I can't, I promise to lead you toward the direction of someone who can. There is no way the MoSRT Student Intern position could be achieved alone; but with the help of the other board members, you will learn, grow, and become a part of the family!

Sincerely,

Kelsey Fellows

Student Intern, Southeast Missouri Hospital of Nursing & Health Sciences

Announcements!

Don't forget to renew your membership!

MoSRT Membership Renewals have been sent out. Please remember that if you do not renew prior to January 1, 2014, you WILL NOT receive a Nominations Ballot.

Visit http://www.mosrt.org/membership.html to renew your MoSRT membership or become a member today!

Upcoming District Events

1st District

Seminar

March 1, 2014

Heartland Regional Medical Center

St. Joseph, MO

4th District

Seminar – 4 hours

February 15, 2014

Missouri Baptist Medical Center, St. Louis, MO

Visit http://www.mosrt.org/calendar.html

for more details!

MoSRT Annual Conference Silent Auction!!!

Help raise the funds that contribute to three (3) $700 Student Radiologic Technologist Scholarships and one (1) $700 Registered Radiologic Technologist Scholarship!

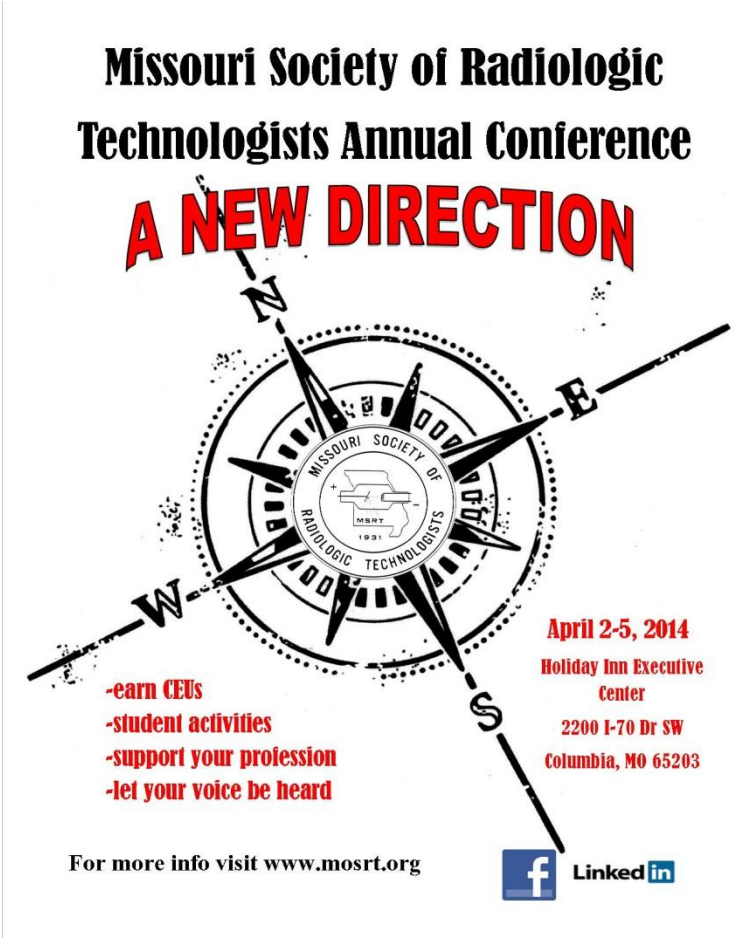
Donations in the past have been made by individuals, businesses, hospitals, and radiology programs. All donors are recognized during the annual conference. Donations made can be as a single item, a gift basket, tickets – or whatever you are able to give. All gifts are fully tax deductible and a tax receipt will be sent upon receipt of the donation.

For questions about the MoSRT Annual Conference Silent Auction, or to make a donation, please contact:

Lorinda Ross, Ways and Means Committee Chair: 816-752-1203

Kate Leshkova, Ways and Means Committee Co-Chair: 314-600-1150

Thank you in advance for your kindness and generosity!



Important Message from the Conference Coordinator

The 82nd Annual MoSRT Conference is not that far off: April 2 – 5, 2014. **Our theme for 2014 is "A New Direction."** We have moved the Conference to the Holiday Inn Executive Center, Columbia, MO in order to *reduce the cost of the hotel rooms* and offer a more centralized location.

As an extra bonus we are offering two lucky attendees **ONE FREE NIGHT LODGING** at the Holiday Inn in Columbia. That's right – all you have to do is stay at the Holiday Inn during the conference and your name will automatically be submitted for a drawing. **We will be rewarding two attendees with One Free Night Lodging each!** The drawings will be held Saturday so we can include everyone who attends; the lucky winners will have money reimbursed after the conference.

Of course we have a great program planned: Speakers, Trivia Night, Student Bowl competition, Murray Lecturer, and the Banquet. And we have contests (Essays and Exhibits), scholarships (Technologist and Students), and two positions for the Student Intern Program.

You will get the most for your money by staying at the Holiday Inn and attending the MoSRT conference. There are several registration options, all of which include at least one meal as well as lots of CEs. So please plan to attend the MoSRT Annual Conference in April and join us in **"A New Direction"** in Columbia MO.

Sincerely,

Joan Hedrick, Med RT (R) (M)

Legislative Update

"RT in JC"
February 12, 2014
SAVE THE DATE!!!

The MoSRT is pleased to announce our next "RT in JC" state advocacy event on Wednesday, February 12, 2014. Members of the Missouri Society of Radiologic Technologists and student technologists will be gathering in Jefferson City to discuss the importance of why licensure standards are necessary for Missouri's medical imaging and radiation therapy professionals and how important it is that qualified radiologic technologists provide care for Missouri patients.

Problem:

• Missouri is one of only five states with no licensure or regulatory laws for personnel working in medical imaging and radiation therapy.

• Radiological procedures like x-rays, radiation therapy and nuclear medicine use ionizing radiation, which can be dangerous when administered incorrectly and even cause cancer. Licensure will ensure that the individuals who perform these procedures are educated in radiation protection procedures, patient positioning, and basic radiologic science physics.

Solution:

• The Missouri Society of Radiologic Technologists is seeking licensing requirements specifying education and certification standards for radiographers, radiation therapists, magnetic resonance technologists, nuclear medicine technologists, cardiovascular invasive specialists and limited x-ray machine operators.

• As part of the licensure standards, Missouri will establish the Radiologic Imaging and Radiation Therapy Board of Examiners. The board will oversee the licensure standards to ensure that all personnel who want to serve as radiologic technologists and perform medical imaging or radiation therapy procedures meet the established practice criteria.

For questions, please email Diane Hutton: Diane.hutton@mosrt.org

Find us on Facebook and LinkedIn!

www.mosrt.org

JANUARY 31, 2014

DEADLINE FOR ALL CONTESTS!

Don't miss out on the following opportunities:

- Scientific Essay Contest
  - *Student & Technologist Categories*
- Scientific Display Contest
  - *Student & Technologist Categories*
- Student Scholarship Contest
  - Up to three (3) Student Scholarships will be awarded, *each* in the amount of **$700!**
    - ❖ MoSRT Student Scholarship
    - ❖ Robert A. Feldhaus Scholarship
    - ❖ Stephanie A. Whisler Scholarship
- Technologist Scholarship Contest
  - One (1) **$700** MoSRT Technologist Scholarship

Visit the MoSRT website for official

Contest Rules & Applications

http://www.mosrt.org/award_guidelines_2014.html

Volunteer spotlight: Q & A with an MoSRT Volunteer

Find out why volunteers choose to dedicate their time to the MoSRT…and perhaps become inspired to do the same! This edition features Carla Allen, MEd RT (R) (CT).

Q. *How long have you been a volunteer for the MoSRT?*

A. I joined the MoSRT in 1999 and began volunteering immediately. While I haven't always been involved in a big way due to other demands in my life, I have found time to judge scientific exhibits, donate silent auction items and present CE lectures.

Q. *How did you become involved as a volunteer?*

A. Shortly after I joined the MoSRT, I attended a 3rd District meeting, where Deb Hurst encouraged me to run for 3rd District representative to the BOD.

Q. *What positions have you held on the MoSRT BOD?*

A. I served as 3rd District Representative from 1999 – 2002, Conference Coordinator in 2003, Student Activities Chair 2004-2006, Ways and Means Chair 2004-2006, member of the Legislative Activities committee and the 75th Anniversary committee 2005-2006, and presented educational lectures in 2002, 2003, 2004, 2005, and 2010. I am currently serving as Vice President and Student Scholarship Chair.

Q. *Do you have any goals you'd like to achieve as an officer on the MoSRT BOD?*

A. I have always been interested in seeing our profession have greater visibility and respect from both fellow health professionals and the public at large. I see licensure as a major pathway to gaining this recognition. I am pleased to be assisting President Kelley McDonald and Legislative Chair Diane Hutton in the MoSRT's participation in the ASRT Affiliate Advocacy Program and am excited to see the MoSRT's advances.

Q. *What would you like to say encourage others to volunteer for the MoSRT?*

A. Know that it is very easy to "start small" when volunteering with the MoSRT. You can find ways to help that fit your schedule, location and skills:

- Going to conference? Introduce a speaker, score scientific posters, or turn the score boards at Quiz Bowl.
- Live near Jeff City? Coordinate with Diane Hutton to visit with legislators.
- Know something interesting (or someone who knows something interesting)? Be a speaker or recruit a speaker.
- Want to work from your home? Score scholarship and essay applications, recruit industry support for MoSRT activities…

Make some friends and dream of what our profession can become!

Calling all Volunteers!!!

Interested in **enhancing** your career? Want to **give back** to your profession? **Consider volunteering on the MSRT Board of Directors!**
Contact **Kelley.Mcdonald@mosrt.org**.

www.mosrt.org

TRIVIA NIGHT

WEDNESDAY night, join us for fun, food, and prizes!!

Trivia Starts at 7:30pm

(After the mixer)

Cost: $40 for a table of 8

1st Place- 8-$20 gift cards

2nd Place- 8 $10 gift cards

3rd Place- 8 $5 gift cards

Winners of each round receive prizes too!!!

50/50 raffle

Sign-up in advance by emailing Trivia_Night@mosrt.org - pay at "trivia night table" during conference registration

The theme this year "Movin South" since MSRT is headed in a new direction!

Dress in your favorite "southern" wear cus the best dressed table may just win ya some extra points!!

Theme ideas: Duck Dynasty, Honey Boo Boo, southern bells, hillbillies, mossy oak …just have FUN ya'all!!!

The following essay is the 3rd place winner under the MoSRT student essay category for 2013. It is reprinted with permission from the author, Yolanda Gilmore from Missouri Southern University.

Magnetic Resonance Imaging and its uses in Diagnosing Navicular Syndrome in Horses

By Yolanda Gillmore

There isn't much that is more beautiful than watching a horse running carefree through the fields or an equine athlete performing to the best of its ability. The advancement of modern technology has helped veterinarians discover how certain injuries occur and how the joints hold up to the rigors of high performance training, but there are some joint breakdown processes that are still a mystery. In this report we will cover the basic anatomy of the equine foot (also known as the hoof) and the basic mechanics of how the structures in the hoof are used in every step the horse takes. We will also discuss one of the more complicated lameness issues, navicular syndrome. The use of Magnetic Resonance Imaging (MRI) in horses has helped veterinarians' diagnose navicular syndrome earlier and more accurately.

The anatomy of the equine limp is amazing when one thinks about the size of the horse, the amount of weight, and force that is placed on them while the horse is in motion. The equine hoof is in and of itself a miracle in design, but it can also be a disaster waiting to happen. Only the very distal end of the leg and the hoof will be described in this paper.

The bone structure of the lower leg is composed of the second or middle phalanx which articulates with the distal phalanx which is also called the coffin bone. The coffin bone is a triangular shaped bone that serves as the attachment site for the distal ends of the lower legs tendons and ligaments. (West, 2010) Posterior to the distal and middle phalanx articulation is the navicular bone. (West, 2010) Encasing the bones is a series of ligaments and tendons that help to support and suspend the bones inside of a keratinized hoof capsule. While all of these structures are at a great risk of injury, the area of the navicular bone is one of the most difficult to identify and diagnose. Let's take a closer look and the navicular apparatus in its structure and its function.

As stated earlier, the navicular bone sets just behind the coffin bone on the palmer side (posterior side) of the distal interphalangeal joint. (Hanson, 2010) The bone articulates with both the middle and distal phalanx. On the palmer surface of the navicular bone is a ridge that is covered with fibro-cartilage that provides a smooth surface for the deep digital flexor tendon (DDFT). (Hanson, 2010) On both side of the distal end of the proximal phalanx starts a set of collateral sesamoidean ligaments and they insert on the proximal border of the navicular bone. (Hanson, 2010) These ligaments act to suspend the navicular bone. There are numerous other smaller ligaments that help to suspend and support the navicular bone, but the collateral sesamoidean ligaments are some of the larger ones. Located between the DDFT and the palmer surface of the navicular bone are fluid filled sacs called the navicular bursa. The bursas are filled with synovial fluid and help to reduce the friction to the DDFT while the DDFT is contracting or relaxing. (Hanson, 2010) The tendons that are responsible for the movement of the lower limb are the common digital extensor tendon and the deep

distal and middle phalanges and is responsible for the straightening of the lower limb, but it doesn't have any interaction with the navicular apparatus. (West, 2010) The deep digital flexor tendon is important in maintaining the position of the foot while the horse is standing. The DDFT is responsible for the flexion of the lower limb while the horse is in motion. (West, 2010) When the horse is in motion the DDFT (as stated earlier) is the "string" that pulls the foot up off the ground as the horse steps. When the foot strikes the ground the DDFT and the surrounding tendons must have a certain degree of stretch to help absorb the shock or load on that limb. (West, 2010) The DDFT must also have enough elasticity to snap back into shape when the tendon is not under load or pressure. As one can imagine the DDFT is under quite a lot of strain and stress the majority of the time and the navicular bone helps to provide the angle that the DDFT needs to maintain in order to properly do its job, but it also provides a smooth surface for the DDFT to glide on. (Hanson, 2010)

Due to the amount of small structures that are located in the navicular area, one can imagine that diagnosing lameness issues in that area can be very complicated, that is why pain in that area is usually called navicular syndrome. The common areas that are affected are the bone itself, the bursa, the DDFT and/or the smaller surrounding ligaments and tendons. (Hanson, 2010) There are many different ways that navicular syndrome can present itself. Horses can present with chronic forelimb lameness, acute lameness, lameness that improves with exercise, lameness in one or both limbs. (Hanson, 2010) Due to the amount of compensation horses do to deal with the pain, horses with chronic lameness can start to develop changes in their gaits and/or the shape of their hoof wall on the affected hoof. (Hanson, 2010)

Some of the common diagnostic practices that are used to diagnose navicular syndrome include but are not limited to nerve blocks, lameness exams (were areas of the affected limb is but under a certain degree of stress to induce exacerbated movements if the horse is in pain), and diagnostic imaging. Diagnostic imaging includes x-rays, ultrasound, thermograph, computed tomography (CT), and MRI. (Hanson, 2010) While x-rays are the most common they can be the most unreliable. In order for an x-ray to be diagnostic the bone in the navicular area must be undergoing some form of change, either it be bone lyses, fractures, or the formation of new bone. By the time changes are detected on x-rays it may be too late for a positive prognosis. Thermograph is used to see the areas that are inflamed through the amount of heat that is given off by the irritated tissue, so veterinarians know where to look for further investigation. Ultrasound is perfect for looking for injuries in tendon and ligaments, however with the navicular area located in the hoof capsule ultrasound can only be used to a certain point before there isn't good transmission of the sound waves. Veterinarians run into many of the same issues with CT as they do with x-rays. With the way that MRI works, injuries can be detected much earlier while there can still be a good prognosis for the horse.

The body of the horse is just like humans in that it is mostly made of water. The hydrogen atoms in that water molecule have a nuclear spin and with that spin are magnetic moments. (Runge, 2008) When an external magnetic force is applied to the body the magnetic moments around the hydrogen atoms will align parallel to the magnetic force applied. (Runge, 2008) The magnetic moments will only line up if the external magnetic force is several times greater than the earth's magnetic force. When the external magnetic force is adjusted either in strength or duration of "on time" the magnetic moments will precess (where the moments spin in a cone shape or like a top spins) when they are tilted away from the parallel position. (Runge, 2008) When this happens an electromagnetic signal is given off. This adjusting of the strength in the magnetic field

and the duration time will cause the different tissue types to give off this signal at different intervals and frequencies. These signals are collected by antennas and are sent to a computer which converts the signals to an image that is displayed on a screen for viewing. (Runge, 2008) Since MRI works from the signals that are given off by the tissues themselves, an image can be produced of the soft tissue structures inside the hoof with MRI where other modalities can't.

Because of MRI's superior image quality in regards to the soft tissue inside the hoof capsule and its ability to reconstruct images at any angle and plane, MRI is quickly becoming the modality of choice for equine foot examinations. Through MRI, changes in the navicular bone itself has been detected earlier allowing for quicker treatment times to help get the horse back to its full performance potential. (Hanson, 2010) Damage to the soft tissue structures have been identified in the bursa as well as the tendons and ligaments that either can't be examined with ultrasound or are not substantial enough to be detected by the ultrasound, this allows for faster, more effective treatment of the tendons/ligaments hopefully allowing for a speedier recovery.

Some of the advantages of MRI not only include the ability image joints, tendons, and ligaments with superior quality, but MRI has no side effects to the body except for mild tissue heating in the new 3 Tesla magnets that have a small gantry and a long exam time. (Runge, 2008; Kane 2010) The disadvantages of MRI are the ability of the doctor reading the exam, the risk to the horse while under general anesthesia, movement of the horse, and the general cost to the owners for the exam. (Kane, 2010)

Because of the inherent risk of general anesthesia and the amount of work that goes into getting a horse ready for an MRI, a standing low-field MRI has been made for the awake and alert horse. (Kane, 2010) With the horse being awake, motion is big problem in acquiring a diagnostic image, the software that is included in the standing MRIs have programs that can, to an extent compensate and correct that motion. (Kane, 2010) However, excessive movement will still show on an image with or without the corrective software. While the standing MRI is more convent to use, the strength of the magnet is only 0.2-0.3 Tesla. (Kane, 2010) With the strength of the magnet being so low, the image quality is not there when compared to the 1.5 Tesla magnet that is in most of the commonly use in MRIs today. (Kane, 2010)

While MRI is the "bread and butter" of equine hoof exam, the number of exams that can be performed with MRI is an ever increasing field. (Kane, 2010) The entire leg to the stifle joint (the knee joint in a human) on the hind leg and all the way to the shoulder joint on the forelimb is now able to be scanned with the MRI. (Kane, 2010) Neurologic exams on the equine head are almost up to the same standard as they are in the medical field. Recently, exams of the horses' neck have been coming into play in the neurologic field as well. (Kane, 2010) Just like in the medical side, the veterinary side of MRI is using contrast media to help diagnose areas of injury and stress. The biggest factor restricting the use of MRI on horses is the size of the horse themselves and the size of the MRI gantry. (Kane, 2010)

The field of diagnostic MRI use in horses is a hugely expanding area in veterinary medicine. With MRI, veterinarians are able to find and diagnose problems in the horses' leg, hoof, head, and now even their necks sooner than they were able to in the past with conventional diagnostic capabilities that were available to them. While the MRI machines are still only found in universities and maybe in the really large

emergency/surgical facilities that are scattered throughout the country, the thought of using one on a performance horses is starting to become a common practice in the diagnosis of chronic, and sometimes severe, lameness issues like navicular syndrome. With MRI, many horses have been able to receive treatment sooner and have that treatment be more specific to the needs of the horse than in the past when the structures inside the hoof capsule couldn't be individually examined. It is because this sensitivity that many equine athletes have made it back to the arena or start another useful career if their previous one was just not possible anymore. The modality of veterinary MRI is an ever expanding area, and who knows maybe someday they might be able to make a gantry that is large enough to fit the whole horse through. If that were ever to happen who know what will happen in regards to the diagnosis of cardiopulmonary problems, gastrointestinal problems, or even genitourinary problems. Who knows what might be found out, diagnosis of lameness issues and neurologic issues have grown by leaps and bounds in the few years that MRI has been used so far, who knows what's next.

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Happy Holidays

from the MoSRT Family to Yours!