

ATSU RESEARCH

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Image (lumbar spine models) courtesy of Dr. Brian Degenhardt, Dr. Eric Snider, Ken Pamperin, and Kelly Rogers



*“The strength of the team is each individual member.
The strength of each member is the team.” ~Phil Jackson*

2015 A.T. Still University research symposiums

Several research symposiums were held at A.T. Still University (ATSU) this year. On the Arizona campus, the Mesa Campus Interdisciplinary Research Committee and two departments from the Arizona School of Health Sciences hosted symposiums. On the Missouri campus, the Kirksville College of Osteopathic Medicine hosted the first Melanoma Symposium, and the A.T. Still Research Institute hosted its annual symposium.

ATSU-Mesa Interdisciplinary Research Committee 2015 Research Symposium

The ATSU-Mesa Campus Interdisciplinary Research Committee hosted the 2015 Research Symposium during the week of April 27-May 1 to showcase faculty and student research that would reach all schools and colleges on campus. During the symposium, 14 faculty researchers or research teams who represented all the schools and colleges on the Arizona campus presented their research during a lunch event on each day of the symposium. More than 30 people attended each daily event. On May 1, a student exhibit highlighted 13 student research posters that included numerous students and faculty from across the Arizona campus. Attendance at the poster exhibit was high with more than 80 faculty, staff, and students attending the student exhibit.

2015 Research Symposium faculty presentations

Anderson B. Characteristics of post-professional athletic training clinical education experiences.

Dishman L. A whole-system based, integrated, and interdisciplinary approach to improving patient experience, revenue cycle management, and financial performance of U.S. hospitals: a conceptual framework.

Gage C, Bliven K. Power production with performance mouth guards: a mixed models assessment using electromyography.

Guillory V. Low birth weight in Kansas: individual and community factors in rural and urban areas.

Presentations, continued

Heath D, Makin I. Integration of physiologic measurements with OMT for year 1 osteopathic medical students.

Heick J. Learning effect and the impact of age and sex on the King-Devick test in healthy individuals aged 14 to 24 years.

Lam K. The impact of sport-related lower extremity injuries on patient-oriented outcomes.

Leafman J, Mathieson K. Telemedicine patient education and engagement preferences of underserved diabetic Native Americans in Arizona: a pilot study.

Lohman C. Cervical nerve root displacement and strain during upper limb neural tension testing: role of the foraminal ligaments in the cervical spine.

Lynskey J. Technology-based lower extremity rehabilitation programs in the home and clinic.

McCoy L. Developing technology-enhanced active learning for medical education: challenges and solutions.

McLeod T. The Barrow Concussion Network: collaborating to make sports safer.

Mineo B, Buchanan B. Options and obstacles: community mobility for seniors in the Phoenix metropolitan area.

Welch C. Healthcare professionals concussion management practices and the use of academic accommodations for adolescent athletes following a sport-related concussion.

2015 Research Symposium Student Poster Exhibit

Cozzi AL, Welch CE, Williams RM, Weber ML, Bujold E, Valovich McLeod TC. Physicians' concussion management and referral patterns for adolescent athletes following sport-related concussion.

Diamant R, Clark M, Ball T, Bongiani A, Cuomo L, Holbrook K, Hutt M, Lambert S, Meyer J, Peterson A. Functional outcomes following use of Hand Mentor as a home program for adults post stroke.

Dunn KL, Bay RC, Cardenas J, Anastasi M, Valovich McLeod TC. The reliability of the Sway Balance application across age groups.

Erickson CD, Valovich McLeod TC, Kay MC, Sleight AJ, Welch CE. Athletic trainers' perceptions of the academic accommodations procedures for student-athletes following a sport-related concussion in the secondary school setting.

Hansen M, Heath DM. Osteopathic neuromuscular medicine, cutaneous temperature differences, and therapeutic change: a student pilot study.

Janani P, Khela S, Elsaied A, Earasi S, Jasicki S, Grady L, Villanueva N, Lewis J. An assessment of the level of knowledge of type II diabetes among the general population of the patients at NYU Lutheran Family Health Centers.

Kay MC, Valovich McLeod TC, Erickson CD, Sleight AJ, Welch CE. Athletic trainers' perceptions of their role and responsibilities regarding academic accommodations as part of the concussion.

Loyola N. A clinical example of meningitis and sudden hearing loss: a case report.

Monsef EP, Makin IRS, Reisbick MH. Development of gaming and e-learning platforms for dental education.

Posters, continued

Roush J, Burger L, Munden E, Surdey E, Wakabayashi K. The consistency for measuring the 6-minute walk test using a measuring wheel with a one-week interval.

Roush J, Suckstorff A, White J. The test-retest reliability of time when stair climbing and power during the Margaria-Kalamen power test with a one-week interval.

Sanford SM, Adler KM, Davis MJ. Does targeted training on personal statement and CV development enhance medical students' chances to secure interviews at preferred residency sites?

Smith K, Symancyk C, Roehling T, Bordenave L. The effects of diaphragmatic breathing exercises on decreasing symptoms of urge urinary incontinence.

ATSU-Arizona School of Health Sciences Physical Therapy Poster Days

This year, the Physical Therapy department held two student poster days on May 8 and July 10. Twenty-seven posters were presented, involving 63 students. Posters topics arose from student capstone projects, and they covered a variety of physical therapy topics. The poster days were attended by students and faculty from ATSU's Arizona School of Health Sciences, Arizona School of Dentistry & Oral Health, and School of Osteopathic Medicine in Arizona. ATSU alumni and community-based clinicians also attended.

2015 Physical Therapy Poster Day posters

*indicates poster competition winners

Axelrod J, Rupert J. Hip and thoracic spine impairment measures in firefighter recruits.

Bowes S, Uldrich M, Hines Z. The impact of the Matter of Balance program on the dual task timed up and go in community-dwelling older adults: a case series.

Brewer K, Doporcyk J. Reliability of scoring the Functional Movement Screen from video.

*Brinton C, Burris K. Reliability of measuring hip, knee, and ankle motion using digital video. [Outstanding outcome measures capstone award honorable mention].

Burger L, Munden K, Surdey E, Wakabayashi K. The consistency when measuring 6-minute walk test using a measuring wheel with a one-week interval.

Cavanagh J, Chandler S, Connolly K. Effects of in-home use of virtual reality and robotics on dorsiflexion strength and gait parameters in a chronic stroke survivor.

Chayrez S, Cortez D, Lucas K, Samel E. A prosthesis to train the proprioceptive capabilities of the residual limb of lower limb amputees.

Decker A, Ewell A, Gubler M, Akina D. The comparison of two thoracic manipulation techniques to improve neck pain.

DePeralta J, Greenwood J. Lumbar spine impairment measures in firefighter recruits.

Garibaldi S, Harrell K. The ability of the Functional Movement Screen to predict musculoskeletal injury in firefighter recruits.

Posters, continued

*Hortin AJ, Lenderink J, Peinter T. Dynamic warm-up and performance: a systematic review. [Outstanding applied research project capstone award].

English S. For a 65 year-old female with Legg-Calve-Perthes disease who underwent a SuperPath hip replacement surgery requiring no hip precautions after the procedure, will Kaltenborn Grade I-III hip mobilization techniques yield clinically different improvements in passive range of motion, active range of motion, and timed up-and-go test (TUG)?

Jensen K, Torrez S. The effects of a dynamic plantarflexion assist brace on locomotor function in healthy and impaired individuals.

Kauffman J, Stuart A, Tseng F. The Intelligent Stick: development and initial testing of a user manual and protocol.

*Koepeke R, Porcaro A, Powell B, Rawson L. The effects of an exotendon orthosis on locomotor function in individuals with lower extremity weakness. [Outstanding applied research project capstone award honorable mention].

MacArthur S, Briski J, Jordan B. The use of Bal-A-Vis-X to improve functional coordination in children with motor delays: a case-series.

Miner T. The use of Wellpepper mobile application to improve home exercise program adherence: a case series.

Mrosewske J, Collins K. The effect of diaphragmatic breathing exercise on females with urge urinary incontinence.

*Payton J. Effects of eccentric loading, cross friction massage, and lumbar stabilization in a patient with gluteus medius tendinopathy: a case report. [Outstanding outcome measures capstone award honorable mention].

*Rowe N, Strangberg E, Hart C. Impact of Matter of Balance on fear of falling and quality of life. [Outstanding applied research project capstone award honorable mention].

Smith K, Symancyk C. The effect of diaphragmatic breathing exercise on females with urge urinary incontinence.

*Spence J. The inclusion of two athletes with disabilities in high school sports: a case study. [Outstanding outcome measures capstone award].

Stein J, Runge K, Miki M, Skeete K. The test-retest reliability when measuring individual's time when walking and walking speed during a 10-meter walk test with a one-week interval.

Wang K. Barriers to the implementation of evidence-based practice in physical therapy professionals.

White J, Suckstorff A. The test-retest reliability of time when stair climbing and power during the Margaria-Kalamen power test with a one-week interval.

Wright C. Evidence-based practice: self-efficacy of physical therapists.

Wright K. Assessing the short-term effects of a neuroscience education approach to chronic low back pain: a case study.

First Melanoma Symposium

The first Melanoma Symposium was held May 15 on the Missouri campus. Faculty from the basic sciences and clinical sciences gave oral presentations about research related to melanoma. Faculty and students from ATSU's Kirksville College of Osteopathic Medicine and fellows and residents from Cleaver Dermatology attended the symposium.

First Melanoma Symposium presentations

Baer R. Melanoma signaling dysfunction: developmental origins and microenvironments.

Cleaver L. Clinical trials and clinical case discussion.

Cox J. Therapy for melanoma.

Ramaraj P. Systemic studies on melanoma: difference between males and females in melanoma.

ATSU-Arizona School of Health Sciences Occupational Therapy Research Day

The Occupational Therapy department held its annual student research day on Sept. 8. Five research presentations were given by third-year occupational therapy students. Four of those presentations were also presented as research posters. About 100 occupational therapy students attended the research day. About 10 faculty attended the presentations, and several University administrators and faculty from the Athletic Training, Audiology, Physical Therapy, and Physician Assistant Studies departments attended the poster session.

2015 Occupational Therapy Research Day presentations

* indicates presenter

Adams J*, Azeemuddin A, Carson I*, Miller A*, Neal A, Purdy C, Salvi J*, Stawowy C*. Community mobility options accessed by seniors in the East Valley. [Faculty advisers: Buchanan B, Mineo B].

Banfield C*, Brenza L*, Love E*, Sullivan J*, Holly A, McKellar J, Wan A. The need for occupational therapy in health promotion practices of adults with arthritis in community based programs. [Faculty advisers: Kennedy A, Clark M].

Carlson J*, Hawkins J, Murillo C*, Robinson A*, Rudloff C, Shaw K*. OT and OTA student perceptions of professional responsibilities, collaboration, and roles: a pilot study. [Faculty adviser: Diamant R].

Fazekas L*, Galbraith B*, Kimball B*, Perna J*, Phillips J*, Tharp H*. Characteristics, practices and beliefs of occupational therapists who are fieldwork educators in Arizona. [Faculty adviser: Greer M].

Rolston K*, Robinson R*, Figgins R*, Sander E*, Christensen J*, Mortensen M*. The relationship between leisure interests and outcomes of outpatient hemodialysis. [Faculty advisers: Voytek M, Schulz E].

2015 Occupational Therapy Research Day posters

*only authors who presented the poster are listed

Azeemuddin A, Neal A, Purdy C. Community mobility options accessed by seniors in the East Valley.

Hawkins J, Rudloff C. OT and OTA student perceptions of professional responsibilities, collaboration, and roles: a pilot study.

Posters, continued

Holly A, McKellar J, Wan A. The need for occupational therapy in health promotion practices of adults with arthritis in community based programs.

Tharp H, Kimball B. Characteristics, practices and beliefs of occupational therapists who are fieldwork educators in Arizona.

Seventh annual Interdisciplinary Biomedical Research Symposium

On Oct. 31, the seventh annual Interdisciplinary Biomedical Research Symposium was held on the Missouri campus. The symposium included a poster session and several oral presentations given by faculty and staff from ATSU and by students from ATSU and Truman State University. One hundred twenty-four people attended the symposium: six administrators, 28 faculty members, and 62 students from ATSU attended; and six faculty members and 20 students from Truman State University attended.

Seventh annual Interdisciplinary Biomedical Research Symposium oral presentations

* indicates presenter

Coffey J*, Choudhry M, Shlossman M, Makin I, Singh V. Use of multiplex qPCR for practical detection of periodontal pathogens.

Coffey J, Crutchfield P, Frei W, Hatch D*, Kaminski A. Reducing patient no-show rates through improved communication and patient education.

Crutchfield P*, Azam H, Joshi D, Paulo V, Sabia B, Short J. Triggering adverse events of dentistry in a rural community health center.

Eljdid G, Daering N*, Tilton E, Bellinger C, McDaniel D, Bellinger B, Pazdernik V, Snider E, Degenhardt B. Assessing the efficacy of objective feedback on palpatory skill development in osteopathic medical students.

Govro EJ*, Stuart MK. Cytokine production of THP-1 macrophages stimulated with *Trichomonas tenax*.

Hudman DA*, Sargentini NJ. Human pathogenic *Borrelia*, *Ehrlichia*, and *Rickettsia* spp. in ticks collected from Northeast Missouri from April to September 2014.

Loveland AL*, Chamberlain NR. Exploring the effect of *dnaK* mutation on persistence in *Staphylococcus aureus*.

McDowell D*, Cartagena A, Rodriguez R, Ahmad Z. Significance of peptide binding β DELSEED-motif of ATP synthase in combating microbial infection and tumor suppression.

Nassar MA*, Speyer CL, Bukhsh MA, Hachem AA, Gorski DH. Riluzole mediates anti-tumor properties of breast cancer cells independent of the metabotropic glutamate receptor-1.

Pickett BB, Anderson TJ, McDaniel DJ*, Marberry KM, Brechue WF. Utility of a wearable fitness monitor for interpreting intensity of activity in asymmetric gaits.

Seventh annual Interdisciplinary Biomedical Research Symposium posters

*indicates poster competition winners

*Amini A, Liu M, Ahmad Z. ATP synthase: the therapeutic molecular drug target for polyphenols.

Azim S, Merchant MM, Laughlin TF, Ahmad Z. An alternative approach to combat microbial infections by peptide-induced inhibition of ATP synthase.

Ball K, McDaniel D, Bhatia S, Webb S, Bellinger B, Degenhardt B. Objective characteristics of osteopathic medical students performing rotational testing of lumbar vertebral segments.

Batten SM, Dobard SE, Buell JH, Cammack SA, Sexton WL. Oxygen kinetics and muscle twitch tension in the rat extensor digitorum longus muscle after creatine kinase inhibition.

Breitzke B, Naylor K, Bhatia S, Pamperin K, Degenhardt B, Snider E. Is accuracy of diagnosis dependent on the positioning of the patient during an osteopathic evaluation?

*Bruning A, Werman C, Daering N, Piatt C, Bhatia S, Bellinger B, Webb S, Degenhardt B. Assessing the influence of examiner characteristics on palpatory force in osteopathic medical students.

Bunning AR, Sempertegui-Sosa C, Singh V. Determining the role of the DNA binding domain of MgrA in *Staphylococcus epidermidis* biofilm formation.

Cloonan M, Krusniak L, Satchell M, Pazdernik V, Degenhardt BF. Effects of respiration on skin displacement and the location of the lumbar spine: a study of human participants in the prone position.

Coffey J, Choudhry M, Shlossman M, Makin I, Singh V. Use of multiplex qPCR for practical detection of periodontal pathogens.

Coffey J, Crutchfield P, Frei W, Hatch D, Kaminski A. Reducing patient no-show rates through improved communication and patient education.

Crutchfield P, Azam H, Joshi D, Paulo V, Sabia B, Short J. Triggering adverse events of dentistry in a rural community health center.

Dobard S, Batten S, Buell J, Cammack S, Ware A, Sexton W. Measurement of myocardial contractility and interstitial PO₂ in the cardiac muscle of rats: a preliminary proof of concept study.

Eljdid G, Daering N, Tilton E, Bellinger C, McDaniel D, Bellinger B, Pazdernik V, Snider E, Degenhardt B. Assessing the efficacy of objective feedback on palpatory skill development in osteopathic medical students.

Giles D, Bartochowski Z, Pazdernik V, Degenhardt B. Analysis of tissue hysteresis of contracted versus relaxed muscles.

Gorman NT, Mayhew JL, Brechue WF. Relationship between pelvic tilt and structure-function orientation in movement.

Govro EJ, Stuart MK. Cytokine production of THP-1 macrophages stimulated with *Trichomonas tenax*.

Hassan SS, Fawzy N, Ahmad Z. Frequency and clinical significance of the expression of the multidrug resistance proteins MDR1, MRP1, and LRP in acute myeloid leukemia.

*Head JA, Powelson S, Cox C. Learning collaboration for interprofessional (IP) practice.

Hohenbery T, Le P, Badheka S, Ramaraj P. In-vitro determination of the differential roles of androgens (androstenedione and testosterone) and progesterone in increased male mortality in melanoma using a human melanoma (BLM) cell model.

Posters, continued

Hudman DA, Sargentini NJ. Human pathogenic *Borrelia*, *Ehrlichia*, and *Rickettsia* spp. in ticks collected from Northeast Missouri from April to September 2014.

Loveland AL, Chamberlain NR. Exploring the effect of *dnaK* mutation on persistence in *Staphylococcus aureus*.

McDowell D, Cartagena A, Rodriguez R, Ahmad Z. Significance of peptide binding β DELSEED-motif of ATP synthase in combating microbial infection and tumor suppression.

Mitrovich C, Yi-Frazier JP, Pascual M, Panlasigui N, Beauregard N, Cochrane K, Pihoker C, Malik FS, Briggs-Early K. Rural versus urban quality of care (QOC) in youth with Type 1 diabetes (T1D): a pilot study.

*Nassar MA, Speyer CL, Bukhsh MA, Hachem AA, Gorski DH. Riluzole mediates anti-tumor properties of breast cancer cells independent of the metabotropic glutamate receptor-1. [Overall award for outstanding student poster].

*Nickle TR, Stanley EM, Meyer TJ, Middlemas DS. Corticosterone induces depressive-like behavior in female peri-pubescent rats, but not pre-pubescent rats.

*Ostrowski TD, Kline DD, Hasser EM, Ostrowski D. The role of nucleus tractus solitarii (nTS) neurons in cardiorespiratory dysfunction associated with Alzheimer's disease.

Pannu MK, Singh VK, Sargentini NJ. Impact of carotenoid production on radiation survival of *Staphylococcus aureus*.

Pickett BB, Anderson TJ, McDaniel DJ, Marberry KM, Brechue WF. Utility of a wearable fitness monitor for interpreting intensity of activity in asymmetric gaits.

*Ramachandra R, Elmslie KL, Koirala A, Elmslie KS. Na_v channels expressed in muscle afferent neurons and axons.

Rath TD, Shaffer LB, Buell JH, O'Brien ML, Sexton WL. Effect of exercise on interstitial PO_2 and contractile function in the diaphragm of diabetic rats.

*Ring RP, Singh VK. Determining the role of pyruvate dehydrogenase in BCFA metabolism in *Staphylococcus aureus*.

*Snider E, Pamperin K, Pazdernik V, Degenhardt B. Influence of landmark localization on palpation accuracy of bronze lumbar spine models.

Stanley EM, Cho A, Middlemas DS. Is olanzapine predicted to have antidepressant effects on juvenile rats in the forced swim test?

Stanley EM, Middlemas DS. Bio-Rad S3 fluorescent-activated cell sorter.

*Tilton E, Bellinger C, Bellinger B, Pazdernik V, Degenhardt B. Assessing the effect of examiner fatigue on palpation accuracy.

Waldron LC, Growney DJ. Wound healing after laparoscopic surgery: a retrospective comparison of suture and surgical adhesive tape for skin closure.

Werman C, Bruning A, Benoit J, Pazdernik V, Bellinger B, Webb E, Degenhardt B. Relating accuracy of asymmetrical assessment of osteopathic medical students in directional diagnosis on standardized pelvic models and humans.

Yeung CL, Singh VK, Sargentini NJ. Effect of *recN* knockout on radiation survival of *Staphylococcus aureus* vs. *Escherichia coli*.