

Contents–Volume 90

January through December 2019

JANUARY 2019

EDITORIAL

1 Thank You ... and Some Journal Changes

F. Bonato

PRESIDENT'S PAGE

2 The AsMA Global Connection Story with the EU Chief Medical Officers Forum

R. Vermeiren

RESEARCH ARTICLES

4 A Year on the International Space Station: Implementing a Long-Duration Biomedical Research Mission

J. B. Charles and R. A. Pietrzyk

12 Precooling, Exertional Heatstroke Risk Factors, and Postexercise Cooling Rates

T. M. Wohlfert and K. C. Miller

18 Individual Attributes, Values, and Goals of an All-Military Women Antarctic Expedition

J. Blackadder-Weinstein, G. R. Leon, R. C. Norris, N. C. Venables, and M. Smith

26 Reliability of the Thai Version of the Motion Sickness Susceptibility Questionnaire Short-Form

T. Asawavichienjinda and S. Patarapak

32 Resisted and Endurance High Intensity Interval Training for Combat Preparedness

J. G. Tornero-Aguilera and V. J. Clemente-Suárez

37 Returning Aircrew with Chronic Hepatitis B Back to Flying While on Nucleos(t)ide Analogues

D. Tan, C. Kwan, B. B. C. Tan, and W. H. Gan

SHORT COMMUNICATIONS

43 Urea and Minerals Monitoring in Space Missions by Spot Samples of Saliva and Urine

G. Bilancio, P. Cavallo, C. Lombardi, E. Guarino, V. Cozza, F. Giordano, and M. Cirillo

48 Rest and Activity Patterns of Army Aviators in Routine and Operational Training Environments

K. A. Bernhardt, A. M. Kelley, K. A. Feltman, and I. P. Curry

CASE REPORT

53 Superficial Temporal Artery Aneurysm in a Helicopter Pilot Operating at High Altitude

B. M. Sekhar, S. Sheoran, D. Routh, and S. Sharma

TECHNICAL NOTE

58 Ultrasound Guided Lumbar Puncture and Remote Guidance for Potential In-Flight Evaluation of VIIP/SANS

D. J. Lerner, R. S. Chima, K. Patel, and A. J. Parmet

FEATURES

63 You're the Flight Surgeon—S. Dillard

65 Focus on Aerospace Medicine History: History of the Health Maintenance Facility for Space Station Freedom—M. R. Campbell

68 This Month in Aerospace Medicine History: January—W. W. Dalitsch III

FEBRUARY 2019

PRESIDENT'S PAGE

69 The AsMA Global Connection Story with the Iberoamerican Association of Aerospace Medicine

R. Vermeiren

RESEARCH ARTICLES

71 Cone Contrast Test for Color Vision Deficiency Screening Among a Cohort of Military Aircrew Applicants

I. W. Chay, S. W. Y. Lim, and B. B. C. Tan

77 Intersession Reliability and Within-Session Stability of a Novel Perception-Action Coupling Task

C. Connaboy, C. D. Johnson, A. D. LaGoy, G.-J. Pepping, R. J. Simpson, Z. Deng, L. Ma, J. L. Bower, S. R. Eagle, S. D. Flanagan, and C. A. Alfano

- 84 Carbon Monoxide Levels in the Extravehicular Mobility Unit by Modeling and Operational Testing**
M. S. Makowski, J. R. Norcross, D. Alexander, R. W. Sanders, J. Conkin, and M. Young
- 92 Dry-EEG Manifestations of Acute and Insidious Hypoxia During Simulated Flight**
G. M. Rice, D. Snider, S. Drollinger, C. Greil, F. Bogni, J. Phillips, A. Raj, K. Marco, and S. Linnville
- 101 Emotional Intelligence and Emotional State Effects on Simulated Flight Performance**
J. Dai, H. Wang, L. Yang, and Z. Wen
- 109 Pilot Sleep in Long-Range and Ultra-Long-Range Commercial Flights**
A. Lamp, D. McCullough, J. M. C. Chen, R. E. Brown, and G. Belenky
- 116 LCT-EF258 with S171 Mutation in DprA Exhibits Horizontal Gene Transfer Deficiency After Spaceflight**
Y. Yu, D. Chang, Q. Guo, J. Wang, and C. Liu
- 123 Hot-Air Balloon Tour Accidents in the Cappadocia Region**
M. A. Aslaner

REVIEW ARTICLE

- 128 Barodontalgia Among Aircrew and Divers**
I. Nakdimon and Y. Zadik

CASE REPORT

- 132 Aeromedical Decision Making in Internal Jugular Phlebectasia**
S. S. Khatua, P. Sannigrahi, M. Dahiya, P. Rastogi, and A. Raheem

HISTORICAL NOTE

- 135 Fractured Tooth Stabilized with Auto Body Repair Resin on a 1970 Royal Navy Polaris Submarine Patrol**
C. J. Brooks

FEATURES

- 139 You're the Flight Surgeon—C. F. Nolan**
- 144 Focus on Aerospace Medicine History: Dr. Hans Guido Mutke and the Dive of his Me-262: First to Break the Sound Barrier?—M. R. Campbell and V. Harsch**
- 147 This Month in Aerospace Medicine History: February—W. W. Dalitsch III**

AEROSPACE MEDICAL ASSOCIATION NEWS

- 148 Proposed Changes to the By-Laws**

MARCH 2019

AsMA 89th Annual Scientific Meeting Program and Abstract Issue
Hilton Anatole Hotel, Dallas, TX
May 6–10, 2018

- 155 President's Page**
- 156 FAA Schedule**
- 157 Educational Objectives/Credit Hours**
- 158 Annual Lecturers**
- 159 Meeting Abstracts**
- 325 Index to Abstract Authors and Session Chairs**
- 330 Exhibits & Map**

ASMA ASSOCIATION BUSINESS (BLACK BAR)

- 333 Past Presidents of AsMA**
- 334 Council of AsMA**
- 335 Annual Meeting Chairs & Committees**
- 336 Headquarters Staff Photos**
- 336 Wing Board of Directors**
- 337 Minutes of the 2017 Business Meeting**
- 339 Bylaws of the Aerospace Medical Association**
- 346 Maps of Meeting Spaces**
- 348 Corporate Members**
- CIII Program at a Glance**

APRIL 2019

PRESIDENT'S PAGE

353 The AsMA Global Connection Story with IFALPA and ECA

R. Vermeiren

RESEARCH ARTICLES

355 Occupant Injury Severity in General Aviation Accidents Involving Excessive Landing Airspeed

*D. D. Boyd*362 Interrelationship Between Sex, Age, Blood Volume, and $\dot{V}O_{2\max}$ *N. J. Koons, M. R. Suresh, T. E. Schlotman, and V. A. Convertino*

369 Gender Differences in Dry-EEG Manifestations During Acute and Insidious Normobaric Hypoxia

G. M. Rice, D. Snider, S. Drollinger, C. Greil, F. Bogni, J. Phillips, A. Raj, K. Marco, and S. Linnville

378 Capacity to Compensate for Central Hypovolemia and Effects of Menstrual Cycle Phases

V. A. Convertino, T. E. Schlotman, W. Stacey, and C. Hinojosa-Laborde

384 Flight Anxiety Reported from 1986 to 2015

T. K. Grimholt, T. Bonsaksen, I. Schou-Bredal, T. Heir, A. Lerdal, L. Skogstad, and Ø. Ekeberg

389 Flight Performance Aspects During Military Helicopter Flights

Y. Steinman, M. H. A. H. van den Oord, M. H. W. Frings-Dresen, and J. K. Sluiter

396 Systems Safety Risk Analysis of Fatal Night Helicopter Emergency Medical Service Accidents

B. B. Aherne, C. Zhang, W. S. Chen, and D. G. Newman

SHORT COMMUNICATIONS

405 Quality of Electrocardiograms Obtained in Flight by Airline Flight Attendants

P. M. Alves, J. A. Lindgren, D. R. Streitwieser, E. Anzola, N. Ahmed, and N. Nerwich

409 New ACC/AHA Blood Pressure Guidelines and the Operational Readiness of Naval Aviators and Aircrew

M. C. Johnson, A. L. Banaag, K. J. Condie, T. E. Servies, and T. L. Pérez Koehlmoos

CASE REPORT

415 Speech Analysis for Fatigue and Sleepiness Detection of a Pilot

C. A. de Vasconcelos, M. N. Vieira, G. Kecklund, and H. C. Yehia

FEATURES

419 You're the Flight Surgeon—Q. H. Chua, K. Tan, and W. H. Gan

422 Erratum

423 Focus on Aerospace Medicine History: Early Aviation and the Movies—Richard T. Jennings

425 This Month in Aerospace Medicine History: March—W. W. Dalitsch III

426 This Month in Aerospace Medicine History: April—W. W. Dalitsch III

MAY 2019

PRESIDENT'S PAGE

427 The AsMA Global Connection Story via Our GLOC (Global Liaison and Outreach Committee)

R. Vermeiren

RESEARCH ARTICLES

429 Correlation of Cognitive Scores and the Onset of Hypoxia

A. Rajasekar, S. Acharya, B. S. Shender, C. Torres, L. Hrebien, and M. Kam

440 Acute Cardiovascular, Metabolic, and Muscular Responses to Blood Flow Restricted Rowing Exercise

S. J. Mahoney, N. D. Dicks, K. J. Lyman, B. K. Christensen, and K. J. Hackney

447 Performance, Workload, and Situation Awareness in Manual and Automation-Aided Rendezvous and Docking

X. Du, J. Niu, Y. Zhang, M. Wang, D. Wang, B. Wu, J. Cai, and W. Huang

456 Hemispheric Asymmetries of Cortical Thickness in Civil Aviation Pilots

Y. Cao, C. Qiu, C. Zhao, Y. Zhang, Y. Qi, and S. Li

462 Otitis Media with Effusion in Aircrew Members

J. A. Pinto, H. dos Santos Sobreira Nunes, R. S. dos Santos, A. Cavallini, G. Freitas, D. Knoll, and C. Duarte

466 Risk of Fatigue Among Airline Crew During 4 Consecutive Days of Flight Duty*E. M. Goffeng, A. Wagstaff, K.-C. Nordby, A. Meland, L. O. Goffeng, Ø. Skare, D. Lilja, and J.-A. S. Lie***SHORT COMMUNICATIONS****475 Cooling to Facilitate Metabolic Suppression in Healthy Individuals***J. C. Rittenberger, K. L. Flickinger, A. Weissman, M. Repine, J. Elmer, F. X. Guyette, and C. W. Callaway***480 Modafinil as a Stimulant for Military Aviators***T. Ooi, S. H. Wong, and B. See***484 Safety Implications of 6-Month vs. 1-Year First-Class Aeromedical Certificates***W. D. Mills and C. A. DeJohn***TECHNICAL NOTE****488 Breath/Blood Alcohol Concentration as an Indicator of Alcohol Use Problems***D. V. Canfield, E. M. Forster, Z.-I. Cheong, and J. M. Cowan***LETTER TO THE EDITOR****492 Letter to the Editor re: Selective Auditory Attention and Spatial Disorientation Cues Effect on Flight Performance****FEATURES****494 You're the Flight Surgeon—J. L. Shields****496 You're the Flight Surgeon—J. J. Zhang****501 Focus on Aerospace Medicine History: Heinz von Diringshofen: Aeromedical Pioneer—Viktor Harsch****504 This Month in Aerospace Medicine History: May—W. W. Dalitsch III****JUNE 2019****PRESIDENT'S PAGE****505 Team Aerospace***H. J. Ortega, Jr.***RESEARCH ARTICLES****506 Muscle Activation During Gravity-Independent Resistance Exercise Compared to Common Exercises***B. A. Alkner and D. K.-I. Bring***513 Cumulative Cyclic Exposures to 8000-ft Pressurization Equivalence and Attention Network Responses***J. E. Thropp and P. W. Buza***524 Nitrogen Washout and Venous Gas Emboli During Sustained vs. Discontinuous High-Altitude Exposures***R. Ånell, M. Grönkvist, O. Eiken, and M. Gennser***531 Auditory Verbal Working Memory Load Effects on a Simulator-Induced Spatial Disorientation Event***R. Lewkowicz, P. Stróžak, B. Bałaj, and P. Francuz***540 Video Game Play as a Fatigue Countermeasure in Air Traffic Controllers***L. A. Fowler and D. Gustafson***546 Pilots' Fixation Patterns During Taxiing and the Effects of Visibility***X. Zhang, X. Qu, H. Xue, and J. Liu***REVIEW ARTICLE****553 Implications of Space Suit Injury Risk for Developing Computational Performance Models***L. Stirling, P. Arezes, and A. Anderson***CASE REPORTS****566 Pneumocephalus Associated with Inappropriate Valsalva Technique***S. S. Woodside and M. M. Metzler***570 Hypothetical Case of Pancreatitis During a Long Duration Lunar Mission***D. R. Hamilton, P. B. McBeth, M. R. Greene, A. W. Kirkpatrick, and C. G. Ball*

LETTER TO THE EDITOR

- 579 Letter to the Editor re: Ultrasound Guided Lumbar Puncture Is Not Necessarily Useful for VIIP/SANS**

FEATURES

- 581 You're the Flight Surgeon**—*W. P. D. Laslie*
583 You're the Flight Surgeon—*R. J. Doxey*
587 Focus on Aerospace Medicine History: Dr. William Thornton and the Development of the Mass Measurement Device for Spaceflight—*M. R. Campbell and J. B. Charles*
592 This Month in Aerospace Medicine History: June—*W. W. Dalitsch III*

AEROSPACE MEDICAL ASSOCIATION NEWS

- 593 AsMA Constituent Organization Presidents for 2019–2020**

JULY 2019**PRESIDENT'S PAGE**

- 599 "It's Alive!"**
H. J. Ortega, Jr.

RESEARCH ARTICLES

- 601 Insomnia, Work-Related Burnout, and Eating Habits Affecting the Work Ability of Flight Attendants**
C.-J. Hu, R.-M. Hong, G.-L. Yeh, and I.-C. Hsieh
606 Asthma and Rotary-Wing Military Aircrew Selection
W. D. Porter, N. Powell-Dunford, G. D. Wilde, and A. J. R. Bushby
613 AGSM Proficiency and Depression Are Associated With Success of High-G Training in Trainee Pilots
C. Yun, S. Oh, and Y. H. Shin
618 Predicting Workload Experience in a Flight Test by Measuring Workload in a Flight Simulator
Y. Zheng, Y. Lu, Y. Jie, and S. Fu
624 Operational and Experimental Tasks, Performance, and Voice in Space
B. Johannes, S. V. Bronnikov, J. A. Bubeev, T. I. Kotrovskaya, D. V. Shastlivtseva, S. Piechowski, H.-J. Hoermann, J. Rittweger, and J. Jordan
632 Changes in Coordination Motor Abilities of Naval Academy Cadets During Military Survival Training
A. Tomczak, P. Różański, and E. Jówko

SHORT COMMUNICATIONS

- 637 U.S. Army Parachute Mishap Fatalities: 2010–2015**
E. S. Johnson, S. J. Gaydos, J. J. Pavelites, R. S. Kotwal, and J. E. Houk
643 Malaria Prophylaxis Adherence Among Aircrew Members
A. E. Rutherford, R. S. Yale, and M. F. Finn
647 Mortality Among International Astronauts
R. J. Reynolds and S. M. Day

CASE REPORTS

- 652 Rash, Radiculopathy, and Cognitive Biases**
S. Saul and M. Tanael

TECHNICAL NOTE

- 655 High Altitude Performance of Loudspeakers and Potential Impact on Audiometric Findings**
M. Lucertini, T. Botti, F. Sanjust, L. Cerini, A. Autore, L. Lucertini, and R. Sisto

FEATURES

- 660 You're the Flight Surgeon**—*D. M. Navel*
663 Erratum
664 This Month in Aerospace Medicine History: July—*W. W. Dalitsch III*

AEROSPACE MEDICAL ASSOCIATION NEWS

- 665 AsMA Annual Award Winners**

AUGUST 2019**PRESIDENT'S PAGE****679 On Prognostics***H. J. Ortega, Jr.***RESEARCH ARTICLES****681 Recurrent Middle Ear Barotrauma in Student Pilots***J. H. Sohn***688 Adaptation of Systemic and Pulmonary Circulation to Acute Changes in Gravity and Body Position***U. Hoffmann, J. Koschate, H.-J. Appell Coriolano, U. Drescher, L. Thieschäfer, D. Dumitrescu, and A. Werner***696 Dynamic Rabbit Model of Ear Barotrauma***B. Wang, X. Xu, J. Lin, and Z. Jin***703 Hypertension and Obesity Among Civil Aviation Pilots***K. G. Bhat, N. Verma, P. Pant, and M. P. S. Marwaha***REVIEW ARTICLE****709 Spacecraft Maximum Allowable Concentrations for Manganese Compounds in Mars Dust***A. A. Romoser, V. E. Ryder, and J. T. McCoy***SHORT COMMUNICATIONS****720 Hypoxia Hangover and Flight Performance After Normobaric Hypoxia Exposure in a Hawk Simulator***N. Varis, K. I. Parkkola, and T. K. Leino***725 Space Medicine Training in Canada***A. Sirek, K. Samoil, and M. F. Harrison***TECHNICAL NOTE****730 Cardiovascular Risk Assessment in Pilots***A. Mulloy and A. Wielgosz***COMMENTARY****735 Continuous Glucose Monitoring for In-Flight Measurement of Glucose Levels of Insulin-Treated Pilots***F. Strollo, R. Simons, A. Mambro, G. Strollo, and S. Gentile***LETTER TO THE EDITOR****738 Letter to the Editor re: Instrument Meteorological Conditions Are an Important Determinant of Fatal Accident Risk for Both Day and Night HEMS Operations****FEATURES****740 You're the Flight Surgeon—M. Gear****744 This Month in Aerospace Medicine History: August—W. W. Dalitsch III****745 Abstracts Not Presented and Changes****AEROSPACE MEDICAL ASSOCIATION NEWS****747 New Officers, Annual Award Winners, and Business Meeting Minutes****SEPTEMBER 2019****PRESIDENT'S PAGE****755 And the Theme for Atlanta Is...Selection!***H. J. Ortega, Jr.***RESEARCH ARTICLES****757 Noise Exposure and Hearing Impairment in Air Force Pilots***P. Muhr, A.-C. Johnson, J. Selander, E. Svensson, and U. Rosenhall***764 Aircrew Conditioning Programme Impact on +Gz Tolerance***E. Slungaard, R. D. Pollock, A. T. Stevenson, N. D. C. Green, D. J. Newham, and S. D. R. Harridge***774 Anticipated Negative Emotions Effect on Incident Involvement Among Civil Pilots***H. Wang, Q. Xu, C. Yang, X. You, and M. Ji*

782 Prediction of Emergency Capsule Egress Performance*A. M. Alexander, S. L. Sutterfield, K. N. Kriss, S. M. Hammer, K. D. Didier, J. T. Cauldwell, A. C. Dziewaltowski, T. J. Barstow, and C. J. Ade***788 Success Rates at an Air Force Pilot Academy and Its Relation to Methylphenidate Use***S. Sarfati, I. Nakdimon, J. Tsodyks, A. Assa, and B. Gordon***792 Preflight Risk Assessment for Improved Safety in Helicopter Emergency Medical Service Operations***B. B. Aherne, C. Zhang, W. S. Chen, and D. G. Newman***800 Self-Assessed Preferred Retraining Intervals of Helicopter Underwater Egress Training (HUET)***C. Bottenheft, E. A. P. B. Oprins, M. M. J. Houben, T. Meeuwssen, and P. J. L. Valk***REVIEW ARTICLE****807 Revisions to Limits for Methanol in the Air of Spacecraft***R. R. Scully, H. Garcia, J. T. McCoy, and V. E. Ryder***SHORT COMMUNICATION****813 Body Composition Comparison of Upper- and Underclass Reserve Officers' Training Corp Cadets***Q. R. Johnson, C. S. Mackey, T. D. Muddle, D. B. Smith, and J. M. DeFreitas***TECHNICAL NOTE****819 Operationally Relevant Behavior Assessment Using the Robotic On-Board Trainer for Research (ROBoT-r)***V. Ivkovic, B. Sommers, D. A. Cefaratti, G. Newman, D. W. Thomas, D. G. Alexander, and G. E. Strangman***FEATURES****826 You're the Flight Surgeon—A. A. Beauvais, J. M. Tate, and J. K. Kluesner****830 This Month in Aerospace Medicine History: September—W. W. Dalitsch III****OCTOBER 2019****EDITORIAL****831 AMHP's Open Access Option***F. Bonato***PRESIDENT'S PAGE****832 Team Aerospace Revisited***H. J. Ortega, Jr.***RESEARCH ARTICLES****834 Joint Helmet-Mounted Cueing System and Neck Muscle Activity During Air Combat Maneuvering***R. Sovellius, M. Mäntylä, H. Heini, J. Oksa, R. Valtonen, L. Tiitola, and T. Leino***841 Adaptive Ground Control System of Multiple-UAV Operators in a Simulated Environment***H.-J. Lim, S.-H. Choi, J. Oh, B. S. Kim, S. Kim, and J. H. Yang***851 Cognitive Function in Simulated Paragliding Flight***M. Wilkes, G. Long, H. Massey, C. Eglin, and M. J. Tipton***860 Personal and Work Factors That Predict Fatigue-Related Errors in Aircraft Maintenance Engineering***T. L. Signal, M. J. van den Berg, and H. M. Mulrine***867 Follow-Up of Blebs and Bullae in Pilots 40 Years and Older Using CT***S. Bang, S. Yang, S. W. Cho, D. H. Kim, and H. Kang***REVIEW ARTICLES****872 Aviation Safety vs. Medical Confidentiality: Disclosure of Health Information for Accident Prevention and Investigation***J. M. Schuite***882 A Systemic Review and Meta-Analysis About the Prevalence of Neck Pain in Fast Jet Pilots***A. Riches, W. Spratford, J. Witchalls, and P. Newman***CASE REPORT****891 Generalized Epileptic Seizure Induced by the Stroboscopic Effect of Helicopter Blades***L. Corgie, N. Huiban, L. Quesnel, F.-X. Brocq, J.-F. Boulard, and M. Monteil*

TECHNICAL NOTES

- 896 Medication Adverse Reaction, Risk Stratification (MAR²S) Model**
C. M. Cronrath, M. P. Klick, C. M. Merfeld, and S. J. Gaydos
- 901 Integration of a Vestibular Model for the Disorientation Research Device Motion Algorithm Application**
J. B. Dixon, C. A. Etgen, D. S. Horning, T. K. Clark, and R. V. Folga

FEATURES

- 908 You're the Flight Surgeon**—*D. B. Leary*
- 910 You're the Flight Surgeon**—*H. D. McAviney*
- 913 Statement of Ownership, Management, and Circulation**
- 914 This Month in Aerospace Medicine History: October**—*W. W. Dalitsch III*

NOVEMBER 2019**PRESIDENT'S PAGE**

- 915 International Meetings: Global Partnerships**
H. J. Ortega, Jr.

RESEARCH ARTICLES

- 917 Intranasal Scopolamine for Motion Sickness**
A. S. Stanovic, D. L. Alvarenga, V. R. Coleman Daniels, R. G. Simmons, J. C. Buckey, and L. Putcha
- 925 Hemodynamic Responses and G Protection Afforded by Three Different Anti-G Systems**
R. D. Pollock, R. V. Firth, J. A. Storey, K. E. Phillips, D. M. Connolly, N. D. C. Green, and A. T. Stevenson
- 934 Restless Legs Syndrome in Aircrew**
O. A. Düz, N. H. Yilmaz, and O. Olmuscelik
- 938 Association of Medical Certification Factors with All-Cause Mortality in U.S. Aviators**
W. D. Mills and R. M. Greenhaw
- 945 Cardiac Autonomic Activity in Commercial Aircrew During an Actual Flight Duty Period**
E. M. Goffeng, K.-C. Nordby, M. Tarvainen, S. Järvelin-Pasanen, A. Wagstaff, Ø. Skare, and J.-A. Lie
- 953 Psychophysiological Intervention to Improve Preparedness in Military Special Operations Forces**
J. F. Tormero-Aguilera, J. Gregório Pelarigo, and V. J. Clemente-Suárez
- 959 A Medical Review of Fatal High-G U.S. Aerobatic Accidents**
W. D. Mills, R. M. Greenhaw, and J. M. P. Wang

REVIEW ARTICLE

- 966 Challenges in Clinical Management of Radiation-Induced Illnesses During Exploration Spaceflight**
R. S. Blue, J. C. Chancellor, R. Suresh, L. S. Carnell, D. P. Reyes, C. D. Nowadly, and E. L. Antonsen

CASE REPORT

- 978 Squamous Cell Papilloma in a Student Aviator**
K. Swinson, J. Burlile, and J. Pavelites

HISTORICAL NOTE

- 982 Rodolfo Margaria and the First Walk on the Moon**
G. S. Grasso, E. P. Beretta, G. A. Miserocchi, and M. A. Riva

FEATURES

- 986 You're the Flight Surgeon**—*A. M. Long*
- 989 This Month in Aerospace Medicine History: November**—*W. W. Dalitsch III*

AEROSPACE MEDICAL ASSOCIATION NEWS

- 990 Association News**

DECEMBER 2019**PRESIDENT'S PAGE**

- 991 A Tough Assignment**
H. J. Ortega, Jr.

RESEARCH ARTICLES

- ⌚ 993 **Mobile Lower Body Negative Pressure Suit as an Integrative Countermeasure for Spaceflight**
L. G. Petersen, A. Hargens, E. M. Bird, N. Ashari, J. Saalfeld, and J. C. G. Petersen
- 1000 **Action Boundary Proximity Effects on Perceptual-Motor Judgments**
C. D. Johnson, A. D. LaGoy, G.-J. Pepping, S. R. Eagle, A. Z. Beethe, J. L. Bower, C. A. Alfano, R. J. Simpson, and C. Connaboy
- 1009 **Exercise-Induced Changes in Compensatory Reserve and Heart Rate Complexity**
M. B. Mulder, S. A. Eidelson, M. D. Buzzelli, K. R. Gross, A. I. Batchinsky, V. A. Convertino, C. I. Schulman, N. Namias, and K. G. Proctor
- ⌚ 1016 **Simulated Aeromedical Evacuation in a Polytrauma Rat Model**
F. Arnaud, G. Pappas, E. Maudlin-Jeronimo, and C. Goforth
- 1026 **Third-Culture Kid Pilots and Multi-Cultural Identity Effects on Pilots' Attitudes**
W. T.-K. Chan and D. Harris
- 1034 **U.S. Statement of Demonstrated Ability Aeromedical Waivers**
W. D. Mills and J. T. Davis

REVIEW ARTICLE

- 1041 **Risks from Breathing Elevated Oxygen**
B. E. Shykoff and R. L. Lee

SHORT COMMUNICATIONS

- ⌚ 1050 **Mild Hypobaric Hypoxia Effects on Murine Skeletal Muscle Morphology and Macrophages and Well-Being**
L. Zhang, J. Soulakova, and B. St. Pierre Schneider
- 1055 **ACTN-3 Genotype, Body Composition, Fitness, and +G_z Tolerance in Senior Cadets**
S. Shin and H. Jee

CASE REPORT

- 1061 **Navigating the Management of an F-16 Pilot Following Spontaneous Splenic Rupture**
M. Tanael and S. Saul

FEATURES

- 1064 **You're the Flight Surgeon—***L. Searson-Norris*
- 1069 **This Month in Aerospace Medicine History: December—***W. W. Dalitsch III*
- 1071 **Indexes to Volume 90, January–December 2019**