Journal of Athletic Training

http://www.natajournals.org

Volume 56, Number 6, June 2021

Editor-in-Chief Jay Hertel, PhD, ATC, FNATA University of Virginia

Associate Editors

David C. Berry, PhD, AT, ATC Saginaw Valley State University Paul A. Borsa, PhD, ATC, FACSM University of Florida Steven P. Broglio, PhD, ATC, FNATA University of Michigan Douglas J. Casa, PhD, ATC, FNATA, FACSM University of Connecticut Tracey Covassin, PhD, ATC, FNATA Michigan State University Jennifer E. Earl-Boehm, PhD, ATC, FNATA University of Wisconsin-Milwaukee Phillip A. Gribble, PhD, ATC, FNATA The University of Kentucky Joseph M. Hart, PhD, ATC, FNATA, FACSM University of Virginia Kristin L. Kucera, PhD, MSPH, LAT, ATC University of North Carolina at Chapel Hill Stephanie Mazerolle Singe, PhD, ATC, FNATA University of Connecticut Patrick O. McKeon, PhD, ATC, CSCS Ithaca College Jason P. Mihalik, PhD, CAT(C), ATC University of North Carolina at Chapel Hill Joseph B. Myers, PhD, ATC Tampa Bay Rays James A. Oñate, PhD, ATC, FNATA The Ohio State University Brian Pietrosimone, PhD, ATC University of North Carolina at Chapel Hill Susan A. Saliba, PhD, PT, ATC, FNATA University of Virginia Stacy E. Walker, PhD, LAT, ATC, FNATA Ball State University

Official publication of the following associations

National Athletic Trainers' Association Taiwan Athletic Trainers' Society Japan Athletic Trainers' Organization Athletic Rehabilitation Therapy Ireland

Clinical Applications Editors

Terry L. Grindstaff, PhD, PT, ATC, CSCS Creighton University

Senior Associate Editors

J. Ty Hopkins, PhD, ATC, FNATA, FACSM Brigham Young University Darin A. Padua, PhD, ATC University of North Carolina at Chapel Hill Sandra J. Shultz, PhD, ATC, FNATA, FACSM University of North Carolina at Greensboro

Tamara C. Valovich McLeod, PhD, ATC, FNATA Arizona School of Health Sciences

Statistical Consultants

R. Curtis Bay, PhD A.T. Still University Heather M. Bush, PhD University of Kentucky Monica R. Lininger, PhD, LAT, ATC Northern Arizona University Stephen W. Marshall, PhD University of North Carolina at Chapel Hill Bryan L. Riemann, PhD, ATC, FNATA Armstrong State University

Statistical Consultant Emeritus

Bruce M. Gansneder, PhD University of Virginia

Consulting Editors

Craig R. Denegar, PhD, PT, ATC, FNATA University of Connecticut Christopher D. Ingersoll, PhD, ATC, FNATA, FACSM The University of Toledo Kenneth L. Knight, PhD, ATC, FNATA, FACSM Brigham Young University David H. Perrin, PhD, FNATA, FACSM

University of Utah Digital Applications Editor

Christopher M. Kuenze, PhD, ATC Michigan State University

Managing Editor

Leslie E. Neistadt, ELS

Editor

Kevin P. Clear

Indexes: Currently indexed in MEDLINE, PubMed Central, Physical Education Index, SPORT Discus (SIRC: Sport Information Resource Centre, Canada), CINAHL (Cumulative Index to Nursing & Allied Health Literature), AMED (Allied and Alternative Medicine Database), EMBASE (Elsevier Science), Science Citation Index, Current Contents/Clinical Medicine, Science Citation Index Expanded (SciSearch), Journal Citation Reports/Science Edition, Biological Abstracts, and BIOSIS Previews.

The Journal of Athletic Training (ISSN 1062-6050) is published monthly (\$267 for 1-year institutional subscription; \$303 foreign) by the National Athletic Trainers' Association, Inc, 1620 Valwood Parkway, Ste. 115, Carrollton, TX 75006. Periodicals postage paid at Carrollton, TX, and at additional mailing offices. Claims for copies lost in the mail must be received within 90 days (180 days foreign) of the issue date to ensure replacement at no charge.

POSTMASTER: Send address changes to Journal of Athletic Training, c/o NATA, 1620 Valwood Parkway, Ste. 115, Carrollton, TX 75006. CHANGE OF ADDRESS: Request for address change must be received 30 days prior to date of issue with which it is to take effect. Duplicate copies cannot be sent to replace those undelivered as a result of failure to send advance notice. ADVERTISING: Although advertising is screened, acceptance of the advertisement does not imply NATA endorsement of the product or the views expressed. Rates available upon request. The views and opinions in the *Journal of Athletic Training* are those of the authors and are not necessarily of the National Athletic Trainers' Association, Inc.

Copyright 2020 by the National Athletic Trainers' Association, Inc. All rights reserved. Printed in the United States. The Journal of Athletic Training is printed on paper that meets the requirements of ANSI/NISO Z39.48-1992 (Permanence of Paper).



William M. Adams, PhD, ATC University of North Carolina at Greensboro

Jatin P. Ambegaonkar, PhD, ATC, OT, CSCS George Mason University

David R. Bell, PhD, ATC University of Wisconsin-Madison

Michael F. Bergeron, PhD SIVOTEC Analytics

J. Troy Blackburn, PhD, ATC University of North Carolina at Chapel Hill

Michelle C. Boling, PhD, LAT, ATC University of North Florida

Thomas G. Bowman, PhD, ATC University of Lynchburg

Christopher R. Carcia, PhD, PT Duquesne University

Shane V. Caswell, PhD, ATC George Mason University

Damien Clement, PhD, ATC, CMPC, NCC West Virginia University

Michael W. Collins, PhD University of Pittsburgh

R. Dawn Comstock, PhD Colorado School of Public Health

Nicole Cosby, PhD, ATC Point Loma Nazarene University

Kevin M. Cross, PhD, PT, ATC University of Virginia

Gianluca Del Rossi, PhD, ATC, FNATA University of South Florida

Eamonn Delahunt, PhD, BSc (Physiotherapy) University College Dublin

Lindsay J. DiStefano, PhD, ATC University of Connecticut

Carrie L. Docherty, PhD, ATC, FNATA Indiana University

Thomas P. Dompier, PhD, LAT, ATC Datalys Center for Sports Injury Research and Prevention, Inc

Jeffrey B. Driban, PhD, ATC, CSCS Tufts Medical Center

Ruben Echemendia, PhD PANBA, Inc0000

Editorial Board

Todd A. Evans, PhD, ATC University of Northern Iowa

Reed Ferber, PhD, ATC, CAT(C) University of Calgary, Canada

Matthew S. Ganio, PhD University of Arkansas

Kevin M. Guskiewicz, PhD, ATC, FNATA, FACSM University of North Carolina at Chapel Hill

Lee Herrington, PhD, MSc, MCSP University of Salford, United Kingdom

Matthew Hoch, PhD, ATC University of Kentucky

Mark Hoffman, PhD, ATC, FNATA Oregon State University

Yuri Hosokawa, PhD, ATC Ritsumeikan University

Tricia J. Hubbard-Turner, PhD, LAT, ATC, FNATA

University of North Carolina at Charlotte

Thomas W. Kaminski, PhD, ATC, FNATA, FACSM University of Delaware

Zachary Y. Kerr, PhD, MPH University of North Carolina at Chapel Hill

Roger O. Kollock, PhD, ATC, CSCS The University of Tulsa

Kenneth C. Lam, ScD, ATC A.T. Still University

Carl G. Mattacola, PhD, ATC, FNATA University of North Carolina at Greensboro

Timothy A. McGuine, PhD, ATC University of Wisconsin, Madison

Jennifer M. Medina McKeon, PhD, ATC, CSCS Ithaca College

Kevin C. Miller, PhD, ATC Central Michigan University

Anh-Dung Nguyen, PhD, ATC High Point University

Sakiko Oyama, PhD, ATC The University of Texas at San Antonio

Riann M. Palmieri-Smith, PhD, ATC, FNATA University of Michigan William A. Pitney, EdD, ATC, FNATA Northern Illinois University

Johna K. Register-Mihalik, PhD, LAT, ATC Matthew Gfeller Sport-Related TBI Research Center

Scott E. Ross, PhD, ATC, FNATA University of North Carolina at Greensboro

Eric L. Sauers, PhD, ATC, FNATA Arizona School of Health Sciences

Randy J. Schmitz, PhD, ATC, FNATA University of North Carolina at Greensboro

JoEllen Sefton, PhD, ATC, CMT Auburn University

Susan M. Sigward, PhD, PT, ATC University of Southern California

Michael R. Sitler, EdD, ATC, FNATA Temple University

Rebecca Stearns, PhD, ATC University of Connecticut

Erik E. Swartz, PhD, ATC, FNATA University of New Hampshire

Abbey C. Thomas, PhD, ATC University of North Carolina at Charlotte

Toni M. Torres-McGehee, PhD, SCAT, ATC

University of South Carolina

Bonnie L. Van Lunen, PhD, ATC Old Dominion University

Luzita I. Vela, PhD, LAT, ATC University of Virginia

Evert Verhagen, PhD EMGO Institute for Health and Care Research

Cailee E. Welch Bacon, PhD, ATC A.T. Still University

Erik A. Wikstrom, PhD, ATC, FACSM University of North Carolina at Chapel Hill

Gary B. Wilkerson, EdD, ATC, FNATA University of Tennessee, Chattanooga

Jonathan E. Wingo, PhD University of Alabama

Susan W. Yeargin, PhD, ATC University of South Carolina