# **Journal of Athletic Training**

http://www.natajournals.org

Volume 57, Number 5, May 2022

#### **Editor-in-Chief**

Jay Hertel, PhD, ATC, FNATA University of Virginia

#### **Associate Editors**

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

David C. Berry, PhD, AT, ATC Saginaw Valley State University

Steven P. Broglio, PhD, ATC, FNATA

University of Michigan

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 North Carolina at Chapel Hill

Stephanie Mazerolle Singe, PhD, ATC, FNATA University of Connecticut

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

Patrick O. McKeon, PhD, ATC, CSCS Ithaca College

Jason P. Mihalik, PhD, CAT(C), ATC University of North Carolina at Chapel Hill

Kevin C. Miller, PhD, ATC Central Michigan University

James A. Oñate, PhD, ATC, FNATA

The Ohio State University

Brian Pietrosimone, PhD, ATC

University of North Carolina at Chapel Hill

Abbey C. Thomas, PhD, ATC

University of North Carolina at Charlotte

Cailee E. Welch Bacon, PhD, ATC

A.T. Still 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 Saint Louis University

#### Editor

Jessica Ingle, BFA Saint Louis University

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 Training are those of the authors and are not necessarily of the National Athletic Training

Copyright 2022 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).



### **Editorial Board**

William M. Adams, PhD, ATC United States Olympic & Paralympic Committee

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

Shelby Baez, PhD, ATC Michigan State University

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

Thomas G. Bowman, PhD, ATC University of Lynchburg

Thomas A. Buckley, EdD, ATC University of Delaware

Julie M. Cavallario, PhD, ATC Old Dominion University

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

Nicole Cosby, PhD, ATC Point Loma Nazarene University

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

Gianluca Del Rossi, PhD, ATC Creighton University

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

Lindsay J. DiStefano, PhD, ATC University of Connecticut

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

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

Christianne M. Eason, PhD, ATC University of Connecticut

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

Dustin R. Grooms, PhD, ATC, CSCS Ohio University

Matthew Hoch, PhD, ATC University of Kentucky

Yuri Hosokawa, PhD, ATC Ritsumeikan University

David R. Howell, PhD, ATC Children's Hospital of Colorado

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

Adam W. Kiefer, PhD 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

Adam S. Lepley, PhD, ATC University of Michigan

Lindsey K. Lepley, PhD, ATC University of Michigan

Rebecca M. Lopez, PhD, LAT, ATC, CSCS University of South Florida

Robert C. Lynall, PhD, ATC University of Georgia

Brendon P. McDermott, PhD, ATC University of Arkansas

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

Marc F. Norcross, PhD, ATC Oregon State University

Sara L. Nottingham, EdD, ATC University of New Mexico

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

Riann M. Palmieri-Smith, PhD, ATC, FNATA University of Michigan

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

Julianne D. Schmidt, PhD, LAT, ATC University of Georgia

Matthew K. Seeley, PhD, ATC Brigham Young University

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

Offiversity of South Carolina

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

Luzita Vela, PhD, LAT, ATC University of Arkansas

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

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