Robert John Holash PhD

Muscle Physiology, Computational Biology

UNIVERSITY OF CALGARY

Address

Faculty of Kinesiology, University of Calgary: Office KNB 436

Education

2009 - 2017 **Doctorate in Muscle Physiology** University of Calgary, Canada
Discipline: Skeletal Muscle Physiology.
Main subjects: Muscle Physiology, Computational Biology, Data Analysis, Structural Modeling, Stochastic Agent based Modelling.
Thesis: ”Three dimensional stochastic computer model of the skeletal muscle half sarcomere: changes in calcium diffusion caused by the myofilament lattice.”
Committee: Drs., Brian MacIntosh, Henk ter Keurs, Christian Jacob, Chris Barclay.

1997 - 2000 **Master of Science** University of Calgary, Canada
Discipline: Exercise Physiology.
Main subjects: Cycling Power, Muscle Power.
Thesis: ”Validation of single maximal effort tests for power measurement.”
Committee:Drs., Brian MacIntosh, Stephen Norris, Douglas Syme.

1990 - 1993 **Bachelor's Degree in Physical Education** University of Calgary, Canada
Main subjects: Outdoor Pursuits, Leadership in Extreme Environments.
Senior Project: ”Calgary River Cleanup, Conservation of Calgary Rivers and Pathways”.

Courses Taught

2019 - Current **KNES 213 –Introduction to Research in Kinesiology**

Spring 2023 Class size 55
Winter 2023 Class Size 150
Fall 2022 Class Size 150
Winter 2022 Class Size 150
Fall 2021 Class Size 144
Winter 2021 Class Size 148
Fall 2020 Class Size 133
Winter 2020 Class Size 120
Fall 2019 Class Size 120

2020 - 2021 **KNES 355 –Human Growth and Development**

Winter 2021 –Class Size 262
Winter 2020 –Class Size 250

2020 - Current **KNES 375 –Tests and Measurements in Kinesiology**

Fall 2022 –Class Size 78
Winter 2022 –Class Size 77
Winter 2021 –Class Size 80

		Winter 2020 –Class Size 77
2012 - Current	**KNES 381 –Computer Applications in Kinesiology**	**Winter 2023 –Class Size 24**
		Winter 2012 –Class Size 24
		Fall 2010 –Class Size 24
2022	**KNES 475 –Physiological bases of Athletic Performance**	**Winter 2022 –Class Size 40**
2020 - Current	**KNES 606 –Practical Skills for Applied Exercise Physiology**	**Fall–Winter 2022-23 –Class Size 14**
		Fall–Winter 2021-22 –Class Size 15
		Fall–Winter 2020-21 –Class Size 9
2021	**KNES 604 –Self Directed Study**	**Fall–Winter 2020-21 –Class Size 1**

Committee Work

2022-Current **Teaching and Learning Committee** — University of Calgary
Faculty of Kinesiology

2019 - Current **Learning Technologies Advisory Committee** — Taylor Institute for Teaching and Learning
Faculty of Kinesiology

2021 - Current **Ethics Committee for Human Studies** — University of Calgary
Faculty of Kinesiology representative

2021 - 2022 **National Survey of Student Engagement** — University of Calgary
Faculty of Kinesiology

2019 - 2021 **New Student Orientation** — University of Calgary
Faculty of Kinesiology

2019 - 2021 **Student Orientation - Faculty Advisor Panel** — University of Calgary
Faculty of Kinesiology

2021 **Search Committee: Human Growth and Development position** — University of Calgary
Faculty of Kinesiology

2020 **Student Orientation Online Technologies Special Committee** — University of Calgary
Central Orientation Committee

2019 **YUJA Video Evaluation Group** — Taylor Institute for Teaching and Learning
Faculty of Kinesiology

Summer & Honours Students

2023 **Undergraduate Student Research Award (NSERC) –Birtej Mangat** Investigating the Mechanical Properties of Cardiac Muscle in Obese Rats

2022 - 2023 **KNES 466 Advanced Projects in Biomechanics –Ashley Matesic** Relative Hip Drop Timing at Different Speeds and its Relationship to Performance and Force Production in Cross-Country Skiing Double Poling

2022 **Kinesiology Undergraduate Research Funding –Thomas Manktelow** Objective Analysis of Double-Pole Timing in X-Country Skiing.

2022 **PURE Summer Student Ship –Gavin Thomas**
Active force in skeletal muscle fibres from children with cerebral palsy

2021 - 2022 **KNES 490 Honours Project –Allysan Lui**
Assessment of Aerobic power in Collegiate Contemporary Dance Using a High-Intensity Dance Performance Fitness Test (DAFT2)

2021 - 2022 **KNES 490 Honours Project –Chantal Vogel**
Effect of Zwift's Virtual Setting on Individual Outcomes and Performance in Comparison to Traditional Stationary Cycling

2021 - 2022 **KNES 490 Honours Project –Andreas Cordido**
Exercise Thresholds: Functional Threshold Power on an Exergaming Platform versus Power Output at the Respiratory Compensation Point

2021 **Biomedical Engineering Summer Studentship –Maleeka Malik**
Investigating the changes in titin isoforms and concentration and sarcomere organization in skeletal muscles of obese rats

2020 - 2021 **KNES 490 Honours Project –Ashley Lornez**
Investigating Physical Activity Intensity of Virtual Reality Exergame in Recreationally Active Young Adults

Graduate Student Trainees

2021 - 2022 **Jesse Oswald** MKin Capstone project
Mentoring undergraduate students in Honours Research projects

2021 - 2022 **Keenan McDougal** CURE Program
CURE Coach Course research project design in Kinesiology 375

2021 - 2022 **Krystyna Sandowski** CURE Program
CURE Coach Course research project design in Kinesiology 375

2021 - 2022 **Krystyna Sandowski** MKin Capstone Project
Alternative Laboratory Teaching Methods in Undergraduate Kinesiology
A Case Study: KNES 375

Supervisory Committees

2023 - Present **MSc. Timi Ajayai** Faculty of Kinesiology
Detrended fluctuation analysis of heart rate data during constant intensity exercise

2022 - Present **PhD. Gabriele Marinari** Faculty of Kinesiology
New approaches to characterize the $\dot{V}O_2$ slow component and its physiological mechanisms

2022 - Present **MSc. Marissa Doroshuk** Faculty of Kinesiology
Novel Ovulation Research-Recruitment Methods for an App Study

2022 - Present **MSc. Alissa Kazakoff** Faculty of Kinesiology
Novel Ovulation Research-Recruitment Methods for an App

2021 - 2022 **Msc. Mary Mackie** Faculty of Kinesiology
The "Step-Ramp-Step" Protocol: Evaluating the Effects of a Smaller First Step Amplitude and Different Ramp Slopes to Determine the VO_2 Mean Response Time and the Expression of the VO2 Slow Component During Ramp-Incremental Tests

2020 - Present **PhD. Keanen McDougal** Faculty of Kinesiology
Alterations in fatigue, efficiency, and pedaling mechanics during incremental and constant-load high-intensity cycling

2019 - Present **MSc. Jim Griffiths** Faculty of Kinesiology
Heart Rate Variability Novel Methods of Detection

Thesis Examiner

2023 **PhD. Candidacy –Thomas Tripp** Faculty of Kinesiology

2022 **PhD. Candidacy –Cody van Rassel** Faculty of Kinesiology

2021 **PhD. Candidacy –Nada Abughazaleh** Biomedical Engineering

2020 **PhD. Candidacy –Calaine Engals** Faculty of Kinesiology

Thesis Neutral Chair

2023 **Calaine Engals** Faculty of Kinesiology
Characterizing the effect of precise exercise intensity prescription on physiological adaptations to endurance training - an intensity domain-specific approach

2023 **Jenny Zhang** Faculty of Kinesiology
FOS field of study exam PhD. Candidacy

2020 **Anmol Mattu** Faculty of Kinesiology
Menstrual and Oral Contraceptive Phases Do Not Influence Submaximal and Maximal Responses to Exercise or Vascular Responsiveness at Rest

2021 **Anna Thacker** Faculty of Kinesiology
Peer to Peer Learning – Using Structured Video as a Tool to Improve Performance with Middle School Children

2021 **Austin Beever** Faculty of Kinesiology
The effects of simulated altitude on maximal and submaximal exercise

2021 **Hilkka Kontro** Faculty of Kinesiology
Exercise Health and Human Performance

2021 **Jenny Zhang** Faculty of Kinesiology
Neuro-muscular fatigue, cardio-respiratory, and perceptual responses are dependent on the amount of active muscle mass during exhaustive ramp incremental cycling

2022 **Kate Sales** Faculty of Kinesiology
Nutrition, Metabolism and Genetics

2020 **Nate Morries** Faculty of Kinesiology
Biomechanical and Morphological Deficits Following Anterior Cruciate Ligament Reconstruction with Hamstring Autographs: Implications for Rehabilitation and Return to Sport Testing

2020 **Thomas Tripp** Faculty of Kinesiology
Exercise Health and Human Performance

Interviews, News Articles, & Podcasts

2023 **Best of Health Magazine:The Many Health Benefits of Nordic Skiing** readers digest
https://www.besthealthmag.ca/article/nordic-skiing-cross-country-skiing?_cmp=stf

2023 **Why some people are taking a wintry dip from the banks of the Bow River** CBC News
https://t.co/yGpoTu8sB5

2022 **UToday News Article: Course revamp is a hit with kinesiology students when they create their own fitness tests** UToday
https://news.ucalgary.ca/news/course-revamp-hit-kinesiology-students-when-they-create-their-own-fitness-tests

2022 **Council on Undergraduate Research: Course revamp is a hit with kinesiology students when they create their own fitness tests** CUR.org
https://www.cur.org/course-revamp-is-a-hit-with-kinesiology-students-when-they-create-their-own-fitness-tests/

2022 **KQ Education Group: Course revamp is a hit with kinesiology students when they create their own fitness tests** KQ Education Group
https://kqeducationgroup.com/course-revamp-is-a-hit-with-kinesiology-students-when-they-create-their-own-fitness-tests-news/

2021 **Spotify Podcast COVID Coffee Chats @ Ucalgary**
Episode 8: Creating a flipped Classroom with John Holash Spotify Podcast
https://open.spotify.com/episode/1yF8Ff4Zn62JHdBuZ1LB6q?si=0ead0ddf70f24661

2021 **Calgary Journal by Lee Reed: Connection betweeen Mental Health and Exercise. Interview with Dr. John Holash** Calgary Journal

2021 **UToday News Article: HealthyU team creates accessible, cost-friendly workouts catered to students' busy lives** UToday
https://www.ucalgary.ca/news/healthyu-team-creates-accessible-cost-friendly-workouts-catered-students-busy-lives

Publications

Published Journal Articles

In support of the continued use of the term anaerobic threshold
Brian R. MacIntosh, Keenan B. MacDougall, Tara M. Falconer, and R. John Holash
The Journal of Physiology **.* (2021) *.* DOI: https://doi.org/10.1113/JP281262

A stochastic simulation of skeletal muscle calcium transients in a structurally realistic sarcomere model using MCell.
Robert J Holash and Brian R MacIntosh
PLoS Computational Biology *15 (3 Mar. 2019) pp. 1–25.* DOI: https://doi.org/10.1371/journal.pcbi.1006712

An innovative ergometer to measure neuromuscular fatigue immediately after cycling.
Douglas Doyle-Baker, John Temesi, Mary E Medysky, Robert J Holash, and Guillaume Y Millet
Medicine and Science in Sports and Exercise *50 (2 Feb. 2018) pp. 375–387.* DOI: https://doi.org/10.1249/MSS.0000000000001427

A New Test to Measure Neuromuscular Fatigue During and Immediately After Cycling Exercise: A Reliability Study.
Douglas Doyle-Baker, John Temesi, Mary E Medysky, Rosie Twomey, Robert J Holash, Nicole Culos-Reed, and Guillaume Y Millet
Medicine and Science in Sports and Exercise *263 (9 Sept. 2017)*

Skeletal muscle fatigue–regulation of excitation–contraction coupling to avoid metabolic catastrophe.
Brian R MacIntosh, Robert J Holash, and Jean-Marc Renaud
Journal of Cell Science *125.9 (2012) pp. 2105–2114. The Company of Biologists Ltd*

A comparison of exer-gaming interfaces for use in rehabilitation programs and research.
Kazumoto Tanaka, Jim Parker, Graham Baradoy, Dwayne Sheehan, John R Holash, and Larry Katz
Loading *6.9 (2012) pp. 69–81*

Feasibility of the two-hour marathon is a burning issue.
Jared R Fletcher, Shane P Esau, R John Holash, and Brian R MacIntosh
Journal of Applied Physiology (Bethesda, Md.: 1985) *110.1 (2011) 282–discussion*

Procedures for rat in situ skeletal muscle contractile properties.
Brian R MacIntosh, Shane P Esau, R John Holash, and Jared R Fletcher
Journal of Visual Experimentation *56 (2011)*

Books / Book Chapters

Skeletal Muscle Structure.
B R MacIntosh and R J Holash
Canadian Textbook of Exercise Physiology. *2022 pp. 1–60. Digital Publication*

Power output and force-velocity properties of muscle.
B R MacIntosh and R J Holash
Biomechanics and Biology of Movement. *2000 pp. 193–210. Human Kinetics*

Conference Presentations / Published Abstracts

Increased occupation of sarcomeric calcium buffers reduces required calcium release for similar troponin-c binding of subsequent activation.
Robert John Holash, Ian Smith, Walter Herzog, and Brian R MacIntosh
Journal of Muscle Research and Cell Motility vol. 37 (2017). *European Muscle Conference. Montpelier, France*

Effect of sarcomere length on calcium diffusion in a 3-D sarcomere model.
Robert John Holash and Brian R MacIntosh
Journal of Muscle Research and Cell Motility vol. 36 (2015). *European Muscle Conference. Strasbourg, Austria*

The importance of structure on: calcium release, diffusion, and binding in a spatially realistic 3-D sarcomere model.
Robert John Holash and Brian R MacIntosh
(2013). *Biomedical Basis for Human Performance Across the Lifespan*

3-Dimentional calcium kinetics; release, diffusion, binding, and uptake in a multicompartmental, skeletal muscle 1/2 sarcomere.
Robert John Holash and Brian R MacIntosh
Applied Physiology, Nutrition, and Metabolism vol. 37 (2012). *Canadian Society of Exercise Physiology Conference, CSEP*

Modelling calcium diffusion, binding, and uptake in a spatially realistic 3-dimensional sarcomere model.
Robert John Holash and Brian R MacIntosh
Journal of Muscle Research and Cell Motility vol. 33 (2012). *European Muscle Conference. Rhodes, Greece*

A comparison of exer-gaming interfaces for use in rehabilitation programs and research.
Kazumoto Tanaka, Jim Parker, Graham Baradoy, Dwayne Sheehan, John R Holash, and Larry Katz
Loading vol. 6.9 (2012). *Interactive Media Conference. Calgary, Alberta*

Micro-physiological simulation of calcium diffusion in a 3-dimensional sarcomere model.
Robert John Holash and Brian R MacIntosh
Applied Physiology, Nutrition, and Metabolism vol. 36 (2011). *Canadian Society of Exercise Physiology Conference, CSEP*

Can the second head of myosin bind to the adjacent thin filament?
Robert John Holash and Brian R MacIntosh
(2009). *Multi-scale Muscle Mechanics Conference. Woods Hole, Massachusetts*

Skeletal muscle filament spacing changes with contraction.
Robert John Holash and Brian R MacIntosh
Applied Physiology, Nutrition, and Metabolism (2009). *Canadian Society of Exercise Physiology Conference, CSEP*

Modelling calcium release in a simplified two dimensional skeletal muscle model using the agent-based system Netlogo.
Robert John Holash and Brian R MacIntosh
Applied Physiology, Nutrition, and Metabolism vol. 33 (2008). *Canadian Society of Exercise Physiology Conference, CSEP*

Validation of single maximal effort tests for peak power output.
Robert John Holash, Igor Kopecky, Krista Sevdhal, and Brian R MacIntosh
Canadian Journal of Applied Physiology vol. 25 (2000). *Canadian Society of Exercise Physiology Conference, CSEP*

Theses

Three dimensional stochastic computer model of the skeletal muscle half sarcomere: changes in calcium diffusion caused by the myofilament lattice.
Robert John Holash
PhD thesis, University of Calgary.
https://dx.doi.org/10.5072/PRISM/28434

Validation of single maximal effort tests for power measurement.
Robert John Holash
Masters of Science Thesis, University of Calgary.
https://dx.doi.org/10.5072/PRISM/11695

Conference presentation-Students

2023 CASEM Canadian Society of sport and exercise medicine conference March 8-11th *An investigation of active force in skeletal muscle fibres from children with cerebral palsy*
Presenter: Gavin Thomas
Authors Names: Gavin K. Thomas, Venus A. Joumaa, PhD, Tim L. Leonard, PhD, Jason J. Howard, MD, Robert J. Holash, PhD, and Walter Herzog, PhD

32nd International Association for Dance Medicine and Science Conference. *"Validity of the High Intensity Dance Performance Fitness Test in Undergraduate Contemporary Dancers".*
Presenter: Allysan Lui
Supervisor: Mr. Jesse Oswald & Dr. John Holash

16th Annual Biomedical Engineering Undergraduate Summer Research Symposium *Active Force of Skinned Muscle Fibers in Children with Cerebral Palsy*
Presenter: Gavin Thomas
Supervisor: Dr. Venus Joumaa & Dr. John Holash

McCaig Institute Summer Student Symposium 2022 *Gavin Thomas - Investigating active force in skeletal muscle fibres from children with cerebral palsy*
Presenter: Gavin Thomas
Supervisor: Dr. Venus Joumaa & Dr. John Holash

15th Annual Biomedical Engineering Undergraduate Summer Research Symposium: *Investigating titin isoforms and content in the skeletal muscle of obese rats*
Presenter: Maleeka Malik
Supervisor: Dr. Venus Joumaa & Dr. John Holash

22nd Alberta Biomedical Engineering Conference, Banff AB, Oct 22-23, 2021. Poster presentation *Effects of diet-induced obesity on titin isoforms and content in skeletal muscles of rats.*
Malik M, Joumaa V, Rios J, Holash J, Herzog W.

CSEP 2021 Zooming int the future: Exercise science in the virtual age: *Investigating physical activity intensity of virtual reality exergame in recreationally active young adults. Oral Presentation. Ashley Lorenz Supervisor Dr. John Holash*

Student Awards

2021 BME /Faculty of Science Summer Student Best Presentation Award: *For Maleeka Malik: Titan isoform changes in an obesity feeding rat model.*

Awards and Grants:

2023 Undergraduate Student Research Award (NSERC) –Birtej Mangat *Project: Investigating the Mechanical Properties of Cardiac Muscle in Obese Rats.*
Grant Value $6000 University of Calgary, Calgary AB.

2022 PURE Studentship Grant: For Gavin Thomas*: Project:Investigating active force in skeletal muscle fibres from children with cerebral palsy.*
Grant Value $7000 University of Calgary, Calgary AB.

2022 Faculty of Kinesiology Undergraduate Research Scholarship: For Thomas Manktelow *Project: Objective Analysis of Double-Pole Timing in X-Country Skiing.*
Grant Value $7000 *Faculty of Kinesiology*

2021 CURE Curriculum Based Undergraduate Research Experience*Project: Redevelopment of Lab component of Kinesiology 375 so that final lab experiment is student enquiry driven.*
Grant Value $10,000

2021 BME /Faculty of Science Summer Student Best Presentation Award: For Maleeka Malik*: Titan isoform changes in an obesity feeding rat model.*

2019 Faculty of Kinesiology Startup Funds*: For John Holash*
Grant Value $40000 University of Calgary, Calgary AB.

2013 Young Investigator Award: *Best Presentation for: The importance of structure on: calcium release, diffusion, and binding in a spatially realistic 3-D Sarcomere Model.* **Bio-medical Basis for Human Performance Across the Lifespan**.
University of Calgary, Calgary AB.

2013 Outstanding Leadership (Staff) Award. *Roger Jackson Centre for Health and Wellness.*
University of Calgary, Calgary AB.

2012 Research Travel Grant *Faculty of Graduate Studies.*
University of Calgary, Calgary AB.

2011 Excellence in Research Grant *Faculty of Graduate Studies.*
University of Calgary, Calgary AB.

1998 Alberta Sports Research Grant *Development of electronic bike ergometer.*
Government of Alberta.

1996 Alberta Parks and Recreation Grant *Measuring muscle tone in children with Downs Syndrome.*
University of Calgary, Calgary AB.

1996 You make a difference Award *Blind bowling program.*
Canadian National Institute for the Blind, Calgary AB.

1994 Clean World Award, *International Association for Environmental Urban Living (GBH): for accomplishments running the Calgary River Clean-up 1994.*

1993 Mayors Environmental Stewardship Award, *Presented by Mayor Al Duer, for organizing and running the Calgary River Clean-up 1993.*
Mayoral Office, Calgary AB.

Scientific and Professional Memberships

1997-Current	**Canadian Society for Exercise Physiology**	CSEP
2010-Current	**European Muscle Physiology Society**	EMC
2010-Current	**Canadian High Performance Computing Society**	HPC

Training & Learning

2022	**TI 0746-002 Developing Your Teaching Dossier for Tenure and/or Promotion**	Taylor Institute
2022	**TI 0913-003 Creating a Flipped Lesson**	Taylor Institute
2022	**TI 0765-004 Intentional D2L Course Shell Design**	Taylor Institute
2022	**TI 0795-003 Online Student Assessment**	Taylor Institute
2022	**TI 0783-001 Undergraduate Research and Experiential Learning: Focusing Strategies for Courses & Programs**	Taylor Institute
2022	**Academic Integrity in Online courses: Adapting during COVID (March 25)**	Taylor Institute
2022	**2020 – Putting your course online (March 23)**	Taylor Institute
2021	**Learning to teach online**	Linda Learning
2021	**Data science essentials with R**	Linda Learning
2021	**Creating fun and Engaging Video Training: The Why**	Linda Learning
2022	**Learning Git and GitHub**	Linda Learning
2022	**Web Scraping in Python**	Linda Learning

2022	**Using Python with Excel**	Linda Learning
2022	**Excel Advanced formulas and Functions**	Linda Learning
2020	**Increasing engagement with eLearning programs**	Linda Learning
2020	**eLearning essentials: Visual design**	Linda Learning
2020	**eLearning essentials: Instructional design**	Linda Learning
2020	**Developing and delivering online courses**	Taylor Institute
2019	**Teaching Days**	Taylor Institute
2019	**Data Science with Python**	Linda Learning
2018	**Spill Response Training**	Online, UofC
2018	**Bio-Safety Training**	Online, UofC
2017	**Chematix / Lab Manager**	Chematix, UofC
2007	**Animal Care and Handling**	Online, UofC
2018	**Occupational Health and Safety Orientation**	Online, UofC
2018	**Workplace Inspections Training**	Online, UofC
2016	**WHMIS 2015**	Online, UofC
2016	**Bio-Safety Program Training**	Online, UofC
2016	**Hazard Assessment Training**	Online, UofC

Experience

2019-Current **Instructor: Exercise Physiology, Data Science, Computational Biology** — Kinesiology, UofC

Teaching and Supervising Students in : Exercise Physiology, Data Science, Computational Biology. Developing and teaching the most current technique's for monitoring, recording, and understanding data relating to the physical health, wellness, and performance of peoples through out the lifespan.

2013 - 2018 **Data Science/Systems Analyst** — HPL, Kinesiology, UofC

Design, develop and maintain expert computational solutions for research problems within the Human Performance Lab (HPL). Maintain computers, and research equipment used within the HPL. Design and development of custom software, algorithms, and for research equipment and special projects. Guest Lecturer for KNES: 201, 203, 615, 381, 485/685 courses

2000 - 2013 **Senior Systems Analyst** — Kinesiology, UofC

Technical lead, software designer, and analyst for Kinesiology IT. Led the development and implementation of numerous software projects, network designs, and multi-factor computer projects within Kinesiology co-supervising up-to 5 employees. Led the development of 3 versions of the Kinesiology websites. Led the development and roll out of the first interactive websites for the Olympic Oval, and Active Living (formerly Campus Recreation).

1984 - 2010 **IT Security and Networking Consultant** RJHolash Consulting
Operated a private consulting firm which provided: computer technical support, security development, security testing, software development, application development, and general trouble/problem solving related to hardware, software, and operating systems. Clients included: Calgary Separate School Board, Calgary Regional Health Authority, Canadian National Institute for the Blind, and several private companies in Research Park. Employed up to 3 additional staff for various projects.

1997 - 2000 **Systems Analyst** Kinesiology, UofC
Created the first Active Directory on the University of Calgary campus to solve ongoing computer issues within the Faculty of Kinesiology. Worked to merge Faculty of Kinesiology IT, Campus Recreation IT groups and developed a process to provide IT services to Canadian Sport Centre, Olympic Oval, and Athletic department, in order to provide unified and consistent IT services. Directly managed 2 employees.

1996 - 1997 **Instructor / Research Assistant GAT** Kinesiology, UofC
Lab supervisor & learning tutorials: Human Growth and Development: labs & occasional lectures. Tests and Measures & Exercise Physiology: labs and lectures for Environmental Physiology, and Adapted Physical Education; Developed/taught biomechanics modules for the Outdoor Pursuits rock-climbing course.

1996 - 1996 **Mini University Course Instructor** Campus Recreation, UofC, Calgary
Mini PhD program in Medicine, Camps for Kids. Developed course program and led activities.

1991 - 1994 **Teaching & Lab Assistant / Instructors Assistant** Kinesiology, UofC
Lab supervisor / Tutorials led for: Human Anatomy, Human Growth and Development, Statistics, Test and Measures, Computer Usages in Sport, and numerous activities and outdoor pursuit courses. Coordinated research studies and programs in biomechanics for Dr. Jack Engsburg. Testing and coordinating subjects and performing initial analysis and statistical analysis of data.

1994 - 1996 **Civilian Instructor Department of National Defence** DND CFB Medley, AB
Developed & Taught Survival Instructors, and Air Crew Survival courses and curriculum for the Department of National Defence. Programs included: orienteering, back country survival, camp skills, water craft safety, canoe tripping, leadership.

1993 - 1996 **Ski Instructor/Coach/Guide** Canada Olympic Park, Calgary
Ski Instructor for children's day camps, school programs and private lessons. Taught Alpine, Nordic, and Telemark skiing techniques. Coached junior development programs for Alpine skiing.

1992 - 1994 **Canoe Instructor/Coach/Guide** Calgary Canoe Club, Calgary
Instructed Canoe and kayaking skills and techniques for all manner of groups and school programs, day camps. Organized and led river, backcountry, and white water trips. Coached novice canoe and kayak programs.

Certifications

2013 **ADI Instruments System Management and Teaching basics** University of Saskatoon
ADI System Management and Physiology Instruction modules

2008	**ITIL Intermediate Level V3 certification** *Standards for Computer Support*	University of Calgary
2005	**Management Training** *Franklin Covey Leadership*	Franklin Covey Leadership
2004	**Microsoft Certified System Architect** *MCSA*	Continuing Education, UofC
2001	**Microsoft Certified Database Professional** *MCDP*	Continuing Education, UofC
1998	**Microsoft Certified Professional** *MCP*	Continuing Education, UofC
1994	**Canadian Association of Alpine Ski Instructors** *CSIA Level I*	Canada Olympic Park, WinSport
1994	**Canadian Association of Nordic Ski Instructors** *CASI Level I*	Canada Olympic Park, WinSport
1992	**Canadian Recreational Canoe Association** *CRCA Level V*	Calgary Canoe Club

Conference Organization

2018 - 2019	**Invited Reviewer - International Society of Biomechanics** ISB	Calgary, Alberta
2006 - 2007	**Technology Coordinator, CSEP Conference Banff** CSEP	Banff, AB
1999 - 2000	**Technology Coordinator,CSEP Conference Canmore** CSEP	Canmore, AB
2002	**Presentation Assistant - World Congress of Biomechanics** WCB	Calgary, Alberta
1999	**Presentation Assistant - International Society of Biomechanics** ISB	Calgary, Alberta
1995 - 1996	**Technology Director Special Olympics Canada Winter Games Conference** Special Olympics Calgary	Calgary, AB

Governing Boards-Volunteer

2019	**Team Captain, speaker ready room** ISB/ASB, Calgary, AB	Calgary, AB
2019	**Course Maintenance** International Biathlon Union, World Cup at Canmore	Canmore, AB
2003 - 2016	**Board Member, Canadian Internet Registration Authority** CIRA	Calgary, AB
1995 - 1996	**Technology Director, Special Olympics Canada Winter Games** Special Olympics Calgary	Calgary, AB

1996	**Program Coordinator, Special Olympics swimming** Special Olympics	Calgary, AB
1995 - 1996	**Program Facilitator, PREP program** Preparation for Re-entry into Education Program, Grace Hospital	Calgary, AB
1993 - 1996	**Environmental Director** Calgary Canoe Club	Calgary,AB
1994 - 1996	**Environmental Director** Calgary Area Outdoor Council	Calgary,AB
1993 - 1996	**Outdoor activity and environment advisor** Mayor's Environmental Committee, City of Calgary	Calgary,AB
1992 - 1995	**Emergency Room Support and care** Calgary General and Rocky View Hospitals	Calgary,AB

May 31, 2023

John Holash