

E-NEWS

EDITORIAL NOTE – September 2026

The E-News is the monthly newsletter of CUHMA, the primary outlet to share news/announcements, upcoming events, abstracts of recent publications, job postings, professional perspectives, and images of relevant professional scenes. Submission of applicable content is welcome. New issues are released on the last business day of each month. Past issues are available at <https://cuhma.ca>. Direct correspondence to info@cuhma.ca.

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NEWS/ANNOUNCEMENTS

CUHMA Virtual Scientific Meeting 2026-2

New Directions in Diving and Hyperbaric Medicine

CUHMA will offer a second virtual scientific meeting in 2026 to facilitate community engagement. The special topics program will focus on emerging opportunities related to diving and hyperbaric medicine. The one-day event will be held on Saturday, October 24. There will be invited presentations, original research presentations, and open discussion. Registration information will be detailed in the October issue of the E-News and on the CUHMA website.

Call for Abstracts – CUHMA VSM 2026-2

Original research abstracts are invited for the October virtual scientific meeting. Novel research reports and case studies/series relevant to hyperbaric medicine or diving medicine/physiology/safety will be considered for oral presentation. The submission deadline is September 25. Abstracts should be in standard form: informative concise title, author list, affiliations list, and 250-word summary (introduction, methods, results, and conclusions). Send abstracts to neal.pollock.1@ulaval.ca.

UPCOMING EVENTS

Canadian Association of Wilderness Medicine 2026

CAWM is a non-profit organization with the goal of connecting Canadian practitioners and researchers with an interest in wilderness medicine, and in promoting the field as an area of focus and specialization. The seventh annual

conference will be held September 11-13 in Whistler, BC and virtually in a hybrid format. Pre-conference workshops will also be offered. Visit: <https://cawm.ca/cawm2026>.

CUHMA Online Safety Seminar

An online safety seminar will be held on September 23 at 1930 Eastern. Andrew Melnychenko will present "Examination of a hyperbaric chamber fire" to discuss the events, investigation, and findings related to the fatal chamber fire in Troy, MI in January 2025. This program has been approved for 2 category 'A' continuing education credits from the National Board of Diving & Hyperbaric Medical Technology.

Divescapes Scuba Conference 2026

The Divescapes scuba conference and exhibition will be held October 16-17 at the Evario Events Centre in Edmonton, AB. The Alberta Underwater Council program includes international speakers, workshops, and trade show booths. Visit: <https://www.divescapes.ca>.

DAN-UHMS Diving and Hyperbaric Medicine Special Topics Course

Divers Alert Network and the Undersea and Hyperbaric Medical Society will offer a deeper dive into select dive medicine and clinical hyperbaric medicine topics in the 100th DAN CME program. The content is intended to add knowledge to an existing foundation of diving medicine. It will be held April 03-10 at Anse Chastanet on St. Lucia. For more information: <https://dan.org/event/dan-100th-diving-hyperbaric-medicine>.

UMC Introductory Diving Medicine Course 2027

Undersea Medicine Canada will offer a Level 1 'Introductory Course in Diving Medicine - Fitness to Dive' June 07-11 in Halifax, NS. An optional half-day pre-course will be held June 06 for those wanting additional preparation for the program. Upon successful completion of the course, physicians will qualify as CSA Z275.2-15 Level 1 Diving Medical Examiners and can have their names listed with the Diver Certification Board of Canada (DCBC) to conduct commercial diver medicals in Canada. This 40-h course has been accredited for 35 MAINPRO+ CME credits by the College of Family Physicians of Canada. The registration portal will open on January 15. Contact Dr. Debbie Pestell (drdeb1@ns.sympatico.ca; 902-225-8214) or visit: <https://underseamedicine.ca> for more information.

RECENT PUBLICATIONS

Möller FN, Haarslev C, Mølgaard J, Harris NS, Petersen JCG, Petersen LG. UHAB-1: Physiological responses to a 48-hour spaceflight analog mission underwater. *Life Sci Space Res (Amst)*. 2026 Sep;52:146-153. doi: 10.1016/j.lssr.2026.02.006. Epub 2026 Feb 17.

Underwater habitats (UHABs) are a promising research platform to investigate human performance in spaceflight because they combine isolation, confinement, limited physical activity, and technical life-support demands with real environmental hazards. UHABs accurately replicate several challenges of long-duration spaceflight, including real over perceived isolation, dependency on habitat and technology for survival, and a platform for evaluating novel countermeasures. Here we report the first physiological case study from a 48-hour, single-occupancy underwater habitat (UHAB-1), designed as a proof-of-concept to assess feasibility, life-support constraints, and monitoring strategies for future multi-crew analog missions. With an increasing number and more diverse groups of humans traveling to space, there is a rising demand for high-fidelity analogs and novel habitat solutions for research and training. Physiological monitoring demonstrated increased heart rate and respiratory rate, as well as reduced heart rate variability coincident with elevated ambient CO₂ concentrations (mean ~3500 ppm, with head-level pockets exceeding 6000 ppm). This highlights the importance of robust ventilation and air mixing in protecting cardiovascular function. Ambient temperature and humidity remained stable, with minimal fluctuations in skin temperature (35.4-35.8°C). All physiological parameters stayed within clinically normal ranges over 48 hours, but persistently elevated CO₂ highlights a critical risk for longer or more demanding missions. These findings demonstrate both the feasibility and limitations of UHABs as analogs for human research. They provide foundational insight into physiological adaptation in confined underwater environments, emphasizing the importance of integrating active ventilation, improved air mixing, and CO₂ scrubbing into future habitat designs to protect astronaut health and performance.

Nguyen ST, Nguyen NB. Developing underwater medicine and hyperbaric medicine in Vietnam. *Int Marit Health*. 2026 Aug 11. doi: 10.5603/imh.104645. Epub ahead of print. PMID: 42578736.

Background: From the late 1960s until 1975, the Naval Physiology Department was established to focus on underwater medical research, serving the training needs of naval special forces. Since the 1980s, the Naval Medical Institute has applied recompression to treat some diving accidents, but the results have been limited. Some hospitals in Hanoi, Haiphong and Ho Chi Minh City were also equipped with monoplace and multiplace (4 people)

hyperbaric chambers. However, clinical application research has not received much attention. In 2001, VINIMAM was established, and in 2007, the Center for Underwater and Hyperbaric Medicine of the VINIMAM was created, with the following purpose: research, training of underwater and hyperbaric medicine, application of hyperbaric oxygen therapy (HBOT) in clinical setting, transferring technology of hyperbaric medicine and HBOT for Hospitals. Conclusions: The development of underwater medicine (diving medicine) and HBOT applied in clinical practice is very necessary and urgent in Vietnam as a maritime country, and it also contributes to the treatment of many incurable diseases in clinical practice.

Wang H, Zhou H, Nie J, Du S, Ning W, Ding S, Zhang H. Effectiveness of hyperbaric oxygen in traumatic brain injury patients: a systematic review and meta-analysis. *Complement Ther Med*. 2026 Aug 10:103417. doi: 10.1016/j.ctim.2026.103417. Epub ahead of print. PMID: 42575227.

Background: Traumatic brain injury (TBI) is the most common neurological disorder and a leading cause of global mortality and disability. Although growing evidence suggests potential benefits of hyperbaric oxygen therapy (HBOT) for TBI, its efficacy remains controversial. Methods: We systematically searched PubMed, Embase, Cochrane Library, and Web of Science from inception to March 2026. Randomized controlled trials (RCTs) evaluating HBOT versus any comparator including sham, standard care and no treatment in adults with TBI were included. Two independent reviewers screened records, extracted data, and assessed risk of bias using the Cochrane Risk of Bias tool. Heterogeneity was assessed using the I² statistic. Effect sizes were pooled using random/fixed-effects models per heterogeneity results. Results: 8 studies involving 570 participants were included. HBOT significantly improved computerized cognitive performance (SMD=0.23, 95% CI: 0.07 to 0.40, p=0.004, I² = 0%), executive function and processing speed (SMD = -0.59, 95% CI: -0.93 to -0.26, p=0.0005, I² = 30%), memory function (SMD=0.33, 95% CI: 0.03 to 0.63, p=0.03, I² = 0%), and sleep quality (MD=1.98, 95% CI: 0.07 to 3.88, p=0.04, I² = 65%). No significant benefits were observed for Glasgow outcome scale (RR=1.57, 95% CI: 0.55 to 4.44, I² = 87%), PTSD symptoms (MD = -3.05, 95% CI: -7.05 to 0.95, I² = 67%), neurobehavioral symptoms (MD = -9.06, 95% CI: -32.13 to 14.00, I² = 97%), and emotional distress (SMD = 0.25, 95% CI: -0.32 to 0.81, I² = 85%). Most adverse events were mild and transient. Conclusion: HBOT demonstrates domain-specific benefits for cognitive function and sleep quality in TBI patients, predominantly those with mild TBI. However, evidence for PTSD, neurobehavioral symptoms, and emotional distress remains uncertain. Furthermore, the applicability of current evidence to moderate-to-severe TBI populations is restricted.

Weinrich L, Tischer T, Schlesiger L, Pachowsky ML, Hoos L. Effects of hyperbaric oxygen therapy on human musculoskeletal pathologies in clinical studies: a systematic review. BMC Musculoskelet Disord. 2026 Aug 10;27(1):661. doi: 10.1186/s12891-026-10254-9. PMID: 42576206.

Background: Hyperbaric oxygen therapy (HBOT) has gained increasing interest in regenerative medicine for its capacity to enhance tissue oxygenation, reduce inflammation, and accelerate healing. While its use in musculoskeletal medicine is expanding, particularly among athletes and in sports orthopaedics, the clinical evidence base remains fragmented across indications and has not been systematically evaluated. **Purpose:** The aim of this systematic review was to synthesize the available clinical evidence for HBOT in human musculoskeletal pathologies, with focus on its application in orthopaedic medicine. **Methods:** A systematic PubMed and LIVIVO search identified clinical studies (January 1996 - January 2026) investigating intervention-based studies using HBOT for musculoskeletal conditions in humans. Exclusion criteria were combinatory therapies, transplantations, radiation injuries, osteomyelitis, spine and oral surgery. Data on study design, HBOT protocols and their outcomes was collected. A qualitative synthesis was performed due to heterogeneity in study designs and outcome measures. Risk of bias was assessed using Cochrane RoB 2 tool (RCTs) and ROBINS-I V2 (non-RCTs). Studies were categorized by pathology (muscle/tendons/ligament injury; avascular necrosis (AVN) and bone marrow edema (BME)). **Results:** Nineteen studies involving 612 patients met our inclusion criteria. Conditions included exercise-induced muscle damage (EIMD) and its symptomatic manifestation delayed onset muscle soreness (DOMS), ligament injuries, AVN, BME, and tendon perfusion. Evidence for HBOT's effects in DOMS/EIMD was limited, with RCTs showing no significant benefit. Conversely, AVN and BME studies reported consistent improvements in imaging, pain and functional scores, particularly with prolonged protocols. Limited evidence suggested potential benefits in ligament healing; tendon oxygenation effects were inconclusive. HBOT protocols ranged from 1-12 sessions for soft-tissue and 20-80 sessions for bone injuries, mainly using 60- to 90-minute sessions with 100% oxygen. Adverse events were rare and mild. Most RCTs showed low risk of bias; non-randomized studies had serious-to-critical bias due to confounding and measurement issues. **Conclusions:** HBOT may have a role as an adjunctive therapy for musculoskeletal pathologies, especially AVN and BME, where the most consistent evidence was observed, while its benefit in ligament injuries, muscle recovery, and tendon pathology remains inconclusive and requires higher-quality trials to substantiate. **Clinical relevance:** This topic is directly relevant to orthopaedic and sports medicine practitioners considering its off-label use. This review identifies conditions with the most consistent clinical

benefit, highlights the limitations of current evidence, and defines priorities for future high-quality trials to guide safe and effective clinical implementation.

Wilmshurst P. Persistent (patent) foramen ovale assessment and closure for the general physician. Clin Med (Lond). 2026 Jul;26(4):100600. doi: 10.1016/j.clinme.2026.100600. Epub 2026 May 22.

One-quarter of adults have a persistent (patent) foramen ovale (PFO). Right-to-left shunting through a PFO can facilitate paradoxical thromboembolism, cryptogenic stroke, paradoxical gas embolism, decompression sickness, arterial hypoxaemia and migraine with aura. Atrial septal defects and pulmonary shunts are also associated with these diseases, and investigation must differentiate them from a PFO. The detection and assessment of PFOs and other right-to-left shunts uses ultrasound techniques augmented with intravenous injection of bubble contrast. When diseases are attributed to a PFO, the PFO is usually large, typically about 10 mm diameter and associated with a large right-to-left shunt. Transcatheter closure of a PFO is relatively simple, but it is not always effective. Therefore, patients require careful pre-procedure counselling about risks, benefits, success rates and alternative treatments.

CUHMA-ACMHS is the Canadian voice for the advancement of hyperbaric and diving medicine throughout our country and beyond. Our activities include continuous medical education for physicians, nurses, respiratory therapists and anyone involved in the fields of hyperbaric and diving medicine. We are also promoting dissemination of clinical research, publishing position statements, liaising with related professional associations and government agencies. Our main goal is advocating on behalf of our patients. Our vision is to be the reference for the development and delivery of hyperbaric and diving medicine in Canada and beyond. Our mission is to promote excellence in hyperbaric and diving medicine through leadership in education, promotion of best practices and advocacy for our patients. Our values are excellence, leadership, collaboration, communication, and integrity.

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