

# 10<sup>TH</sup> INTERNATIONAL CONGRESS ON SCIENCE AND SKIING

January 28 - February 1, 2025 Val di Fiemme, Italy

**PROGRAMME** 

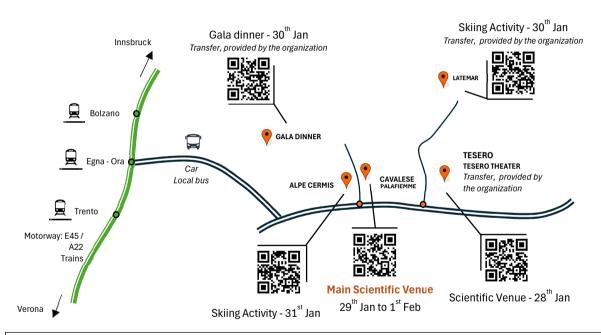
the 10<sup>th</sup> INTERNATIONAL CONGRESS ON SCIENCE AND SKIING 2025 is organized by







# How To Reach ICSS 2025 Venues Use the QRcode to get Google Maps address



#### **Scientific Programme**

Tesero Theatre: Via Noval, 5, 38038 Tesero TN
Palafiemme: Via Fratelli Bronzetti, 64, 38033 Cavalese TN

#### Social Programme

Skiing Alpe Cermis: Via Cermis 2, 38033 Cavalese TN, www.alpecermis.it Gala dinner: Tito Speck - Maso dello Speck, Pozze di Sopra, 2, 38030 Daiano TN Skiing Latemar: Località Pampeago, 38038 Tesero TN, www.latemar.it/





# Organization

#### ICSS 2025 - Local Scientific commitee

Barbara Pellegrini - President, CeRiSM, University of Verona Federico Schena - President, CeRiSM, University of Verona

Alexa Callovini - University of Verona
Lorenzo Bortolan - University of Verona
Paolo Bouquet - University of Trento
Alessandro Fornasiero - University of Verona
Roberto Modena - University of Verona
Anna Pedrinolla - University of Trento
Aldo Savoldelli - University of Trento
Chiara Zoppirolli - University of Verona

#### ICSS 2025 - Organizing commitee

Lorenzo Bortolan - Chair, CeRiSM, University of Verona

Simone Bettega - University of Verona
Giorgia Celeste Cuniberti - University of Verona
Tobia Forrer - University of Verona
Michele Mattivi - University of Verona
Martina Palumbo - University of Verona
Gianluca Viscioni - University of Verona
Beatrice Todesco - University of Verona

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Chiara Zoppirolli (University of Verona, ITA)

#### **Congress Organizing and Scientific Office**

Contact for scientific programme and sponsorship:

**CeRiSM - University of Verona and Trento** 

e-mail: icss2025@ateneo.univr.it

#### **Congress Registration Office**

Contact for congress registration:

GI.A.DA srls

e-mail: skiscience2025@gmail.com

# Theatre - (Tesero) Shuttle Bus from Palafiemme Cavalese

Invited	speech	Tue	e 28 <sup>th</sup> Jan
Chair: G	curo Strøm Solli		Norway
14:00	Canadian Female performance in alpine how they "train to train".	ski	racing:
	Patricia Doyle-Baker		Canada
	ssion: Performance Factors: Physiological, hanical, Technical - part 1	Tue	e 28 <sup>th</sup> Jan
Chair: G	uro Strøm Solli		Norway
14:30	Different approaches to analyze start strategies of we in alpine ski racing		
	Peter Spitzenpfeil		Germany
14:45	Physiological demands and performance predictors mountaineering	of Olyı	mpic ski-
	Alessandro Fornasiero		Italy
15:00	Estimating race time differences from technical bo nordic sit-skiing with simulations	osting	g in para
	Julius Lidar		Sweden
15:15	Company: Qualysis		



Theatre - (Tesero)

#### Shuttle Bus from Palafiemme Cavalese

Invited speech	Tue 28 <sup>th</sup> Jan
Chair: Patricia Doyle-Baker	Canada
15:45 The Female Skier: Current Insights and Future I	Directions
Guro Strøm Solli	Norway
Oral session: Performance Factors: Physiological, Biomechanical, Technical - part 2	Tue 28 <sup>th</sup> Jan
Chair: Patricia Doyle-Baker	Canada
16:15 Analysis of exercise intensity distribution performance in a summer biathlon sprint race	and shooting
YIA Martina Palumbo	Italy
16:30 Biological maturity and performance in youth a	lpine
YIA Giulia Pellizzati	Italy
16:45 Physical fitness factors for roller skiing race per	formance
YIA Shunya Uda	Japan
17:00 Special session: Milano - Cortina 2026	Tue 28 <sup>th</sup> Jan
18:00 OPENING CERIMONY	Tue 28 <sup>th</sup> Jan
18:45 WELCOME PARTY	Tue 28 <sup>th</sup> Jan

# Hall "Cermis"

Keynote		Wed 29 <sup>th</sup> Jan
Chair: Pa	atricia Doyle-Baker	Canada
08:45 Ovarian hormones: Friend or foe of female Olympians?		emale Olympians?
	Kirsty Elliot-Sale	United Kingdom

Invited sp	eech	Wed 29 <sup>th</sup> Jan
Chair: Har	ns-Christer Holmberg	Sweden
09:30	Trends, perspectives, opportunities and challenge technology in wintersports	es with sensor
	Thomas Stöggl	Austria
Oral sessi	on: Testing: Technologies and Methodologies	Wed 29 <sup>th</sup> Jan
Chair: Tho	mas Stöggl	Austria
10:00	Multi-camera framing of dry slope snowboarding jui	nps
YIA	Robbe Decorte	Belgium
10:15	Reproducibility of cortical somatosensory evoked cross-country skiing: a proof-of-concept study	I potentials in
	Harri Piitulainen	Finland

Oral sess - part 2	ion: Testing: Technologies and Methodologies	Wed 29 <sup>th</sup> Jan
Chair: Tho	omas Stöggl	Austria
11:15	Near-infrared-spectroscopy derived vs lactate thre Nordic skiers	sholds in elite
YIA	Jonas Forot	France
11:30	Electromyographic thresholds are expressed in the in cross-country skiers	e double-poling
	Masaki Takeda	Japan
11:45	11:45 Whole-body vibration transmission during resistance vibration exercise and artificial gravity: a "ski simulator" as a potential exercise device for the mission to Mars	
YIA	Riccardo Sorrentino	Slovenija
12:00	A comparison of the reliability of force-velocity pro using linear position transducers in winter sports	ofiling methods
	Cory James Synder	Austria
12:15	Company: Skisens	



Invited spe	eech	Wed 29 <sup>th</sup> Jan
Chair: Barb	para Pellegrini	Italy
13:30	Laboratory and field testing integration for a better of biathlon performance	understanding
	Chiara Zoppirolli	Italy
Oral session Biathlon	on: Performance and Technique Analysis in	Wed 29 <sup>th</sup> Jan
Chair: Chia	ara Zoppirolli	Italy
14:00	A static hold test can assess stability of hold and po for biathlon prone shooting	stural control
YIA	Miika Köykkä	Finland
14:15	Physiologic effects of changing rifle carry position in biathletes	ı elite
YIA	Ethan Livingood	USA
14:30	Visual requirements and shooting performance of the biathlete	ne elite
	Vesa Linnamo	Finland
14:45	Roller ski interval training in biathletes: assessing wathletes meet high-intensity targets on the track	hether
	Simone Bettega	Italy
15:00	IBU Academy: Advancing Biathlon through Education and Dual-Career Development	n, Research,
	Gerold Sattlecker	Austria



Poster	session		Wed 29 <sup>th</sup> Jan
Char: Pa	atricia Doyle-Baker (CAN)		15:15 - 16:15
	Multi-segment skier model for simulating falls at high speed	Piotr Aschenbrenner	Poland
	Movement frequency and performance level during alpine skiing and testing exercises in young skiers	Andrea Besseghini	Italy
	Differences in kinematic parameters of alpine skiing turns between skiers of different skill levels	Ivan Bon	Croatia
	Smart competitions in alpine skiing – a pilot study	Björn Bruhin	Switzerland
	Influence of special life circumstances on the risk of injury in alpine skiing - a study of athletes on the German ski association's development-team	Maren Goll	Germany
	Modifications to the nanoindentation test platform for measuring the mechanical properties of ice and compacted snow	Karlis Agris Gross	Latvia
YIA	Ski wax distribution at the surface of cross-country skis	Pauline Lefebvre	France
	A new electronic rifle range and shooting laboratory for biathlon training and research	Antti Leppävuori	Finland
	Choosing ski length: how mechanical properties evolve across length and width	Alexis Lussier Desbiens	Canada
	Technique analysis of a 50-km cross-country ski marathon race using high-precision kinematic GNSS	Masaki Takeda	Japan
	Characterizing Propulsion Pole Forces in Ski Mountaineering on Snow	Beatrice Todesco	Italy
	A supervised machine learning approach for Technique Identification in Cross-Country Skiing Using Pole-Embedded IMU Sensors	Glanluca Viscioni	Italy

	Diagnostics of strength abilities of paralympic athletes	Kamil Povraznik	Slovakia
YIA	Sex differences in elite ski mountaineering aerobic performance	Forrest Schorderet	Switzerland
YIA	The effect of course design on the number of rank shifts in skicross world cup for women and men	Linda Tomelleri	Norway
YIA	Acute fatigue effects of two different plyometric jumps on landing ground reaction force, time to stabilization, jump height and inter-limb functional asymmetry	Nicola Trotta	Italia
YIA	Physiological responses to heat stress during summer jump training in snowboarders	Risa Iwata	Japan
	The process of psychological training for the alpine skiing instructors - the role of the coach developer	Marcin Krawczyński	Poland
	Better estimation of skills level in recreational skiing: development and validation of a practical multidimensional instrument	Floriana Samantha Luppino	The Netherlands
	From ski mountaineering to unraveling DOMS mechanisms	Lorenzo Visconti	Belgium
	Avoiding mode-monotony: how world-class cross-country skiers use exercise mode variations to manage daily load	Jacob Walther	Germany
	Metabolic responses in the annual training cycle of highly trained cross-country skiers	Alexandra Lyudinina	Russia

Honor s	peech	Wed 29 <sup>th</sup> Jan
Chair: D	ave Bacharach	USA
16:45	ICSS 1996 – 2025: Science in skiing, past –	present – future!
	Erich Müller	

Invited s	speech	Wed 29 <sup>th</sup> Jan
Chair: Fe	ederico Schena	Italy
17:30	Do women have to train differently in altitude?	
	Gregoire Millet	Switzerland

Oral ses	ssion: Physiological Insights in Skiing Wed 29 <sup>th</sup> Jan		
Disciplin	nes		
Chair: G	regoire Millet France		
18:00	Beyond the classical "living high" paradigm in winter sports:		
	lessons from summer sports		
	Franck Brocherie France		
18:15	Spinal and supraspinal excitability during cross-country		
	skiing using V2 skating technique		
	Magdalena Karczewska-Lindinger Italy		
18:30	Longitudinal analysis of aerobic performance indicators in		
	elite cross-country skiers: age- and sex-dependent		
	trajectories across the career		
	Elias Bucher Switzerland		
18:45	Higher energy availability may support hemoglobin mass		
	adaptation during a 21-day period at normobaric hypoxia and		
	normoxia in female skiers		
YIA	Oona Kettunen Finland		

	on: Testing: Technologies and	Wed 29 <sup>th</sup> Jan
Methodolo	gies - part 3	
Chair: Mate	ej Supej	Italy
18:00	Al-racer: an immersive Al-enabled VR-tool racing	for alpine ski
	Martin J. Bünner	Switzerland
18:15	Objectification of the results of the agility-test of AI methods	through the use
	Andreas Huber	Germany
18:30	Trajectory filtering and jump modelling in application	ski cross VR-
YIA	Samuel Schwyn	Switzerland

Invited s	peech	Thu 30 <sup>th</sup> Jan
Chair: Ni	cola Petrone	Italy
15:00	The effect of course design on surrogate measu risk in women and men world cup skicross	res of injury
	Matthias Gilgien	Norway
Oral sess	sion: evention and Risk Management in Skiing	Thu 30 <sup>th</sup> Jan
Chair: Da	ve Bacharaach	USA
15:30	Ski binding performance, biomechanics, testing engineering design	g, and
	Christopher Brown	USA
15:45	Validation of a biofidelic sensorized knee for ski simulations in a dynamic multiaxial test bench	fall
	Nicola Petrone	Italy
16:00	Managing the malaligned skier on and off hill	
	Carl Petersen	Canada

	Oral session: Thu 30 <sup>th</sup> Jan	
Biomechanics in Olympic and Paralympic Nordic Skiing		
Chair: Barbara Pellegrini Ital		
15:00	3D kinematic and mechanical energy in freestyle cross country skiing (XCS) during sprint world cup races	
	Arrigo Canclini Italy	
15:15	Influence of pole length on metabolic and kinematic outcomes in cross country sit skiers	
YIA	Sage Blickensderfer USA	
15:30	The effect of sitting position on sit-ski performance on a treadmill and in a ski ergometer - cycle characteristics and physiological parameters: a case study	
YIA	Ville Sampolahti Finland	
15:45	A study of takeoff motion in ski jumping using principal	
	component analysis and computational fluid dynamics	
YIA	Shin Ikeda Japan	
16:00	Technique adaptation at varying friction in cross-country ski skating	
YIA	Gustav Hindér Sweden	

Keynote		Thu 30 <sup>th</sup> Jan
Chair: Th	omas Stöggl	Austria
16:45 The Development Process of Bringing Junior Tal Class Stage in XC Skiing		lents to the World-
	Øyvind Sandbakk	Norway

Oral sess	sion: Coaching and Skill Development	Thu 30 <sup>th</sup> Jan	
Chair: Øy	Chair: Øyvind Sandbakk		
17:45	Coaching snowboard tricks: do biomechanical c expert insights?	data align with	
	Lina Fay	Germany	
18:00	Freeskiers' self-organized and unique pathways performance in big air	to world-class	
	Espen Berg-Johnsen	Norway	
18:15	Development of the performance structure model slopestyle and big air	l in snowboard	
	Hiroki Ozaki	Japan	
18:30	Perceptions of mental skill development in yout athletes: a qualitative interview study	h snow sports	
	Philippe O Müller	Switzerland	

Oral sessi	on: Biomechanics in Ski Mountaneering	Thu 30 <sup>th</sup> Jan
Chair: Lorenzo Bortolan		
17:45	Mechanical energy and kinematics of diagonal world cup ski mountaineering races	stride technique in
	Renzo Pozzo	Italy
18:00	200 Advancing Ski Mountaineering Gait Analysis: Measuring S Frequency and Contact Time on a Treadmill with Accelerometer	
	Matej Majerič	Slovenia
18:15	Comparative kinematic analysis of ski-mou reveals performance-influencing joint mechani	J
YIA	Michele Mattivi	Italy
18:30	Short or Long? Analyzing the Impact of Ski Pole Mountaineers' Efficiency	Length on Elite Ski
YIA	Nina Verdel	Slovenia

Invited		Fri 31 <sup>st</sup> Jan
Chair: Veit	Senner	Germany
14:45	Evolution of Biomechanical Measurement in Alpine	Skiing: The
	Outdoor Laboratory Beyond Milan Cortina 2026	
	Matej Supej	Slovenia

Oral sess	<b>sion:</b> Biomechanics in Alpine Skiing Fri 31 <sup>st</sup> Jan
Chair: Ve	it Senner Germany
15:15	3D ski boot deformation from distributed IMUs
YIA	Samuel Dallain Canada
15:30	Reliability of systems for skier biomechanics analysis: from lab
	testing to on-slope performance
YIA	Giorgia Celeste Cuniberti Italy
15:45	Beyond the carving-skidding dichotomy: sensor-assisted
	measurement of angle of attack in skiing
YIA	Christoph Thorwartl Austria
16:00	Edge angle estimation using IMUs – an in-field validation approach
	using AI pose estimation
YIA	Chris Hummel Germany
16:15	New Developments in Optical Motion Capture for Winter Sports
	Company presentation: SIMI - Thomas Hock Germany



Room "Cermis"		
Keynote		Fri 31 <sup>st</sup> Jan
Chair: Federico Schena, Vesa Linnamo		Italy, Finland
17:00	Neuromuscular adaptations to strength training	
	Marco Narici	Italy

Oral sess	ion: Advances in Ski Materials and Design	Fri 31 <sup>st</sup> Jan
Chair: Nic	cola Petrone	Italy
17:45	Vibration-optimized design to improve safety-related	performance
	Veit Senner	Germany
18:00	Complete recycling of skiing by selective dissolution solvents with a fully circular approach	ı in bio-based
	Martino Colonna	Italy
18:15	Ski profile characterization using different methods	
	Joakim Sandberg	Sweden
18:30	Alpine skis categorization and on-snow performan from mechanical measurements	ce prediction
	Alexis Lussier Desbiens	Canada
18:45	Advanced materials in ski design	
YIA	Alberto Sancho	Spain

Oral sess	sion: Perspectives on Health, well being and Fri 31st Jan
Leisure ir	n Skiing
Chair: Jol	hn Seifert USA
17:45	Mental health benefits of a one-week, ski-based exercise
	intervention for primary brain tumor patients and their caregivers
	Nora Hansel Germany
18:00	A qualitative study on leisure involvement and well-being in skiing -
	insights from qualitative research on ski enthusiasts and
	instructors
YIA	Taro Aihara Japan
18:15	Current status of small ski areas in
	Hokkaido: management base and its usage
YIA	Shumpei Kurosawa Japan
18:30	Level of overestimation among Dutch recreational skiers: unskilled
	tourists in the mountains
	Floriana Samantha Luppino The Netherlands
18:45	About the concept and effects of alpine skiing as a sport therapy
	project with childhood cancer survivors
	Nicolas Kurpiers Germany

Invited		Sat 1 <sup>st</sup> Feb
Chair: M	atej Supej	Slovenia
08:30	Optimising ski performance: a multi-scale analysis	of ski–snow
	friction in cold conditions	
	Andreas Almqvist	Sweden

0.01.000	ione Analysis of Chi Casy Intercetions	Sat 1st Feb
	ion: Analysis of Ski-Snow Interactions	
Chair: An	ir: Andreas Almqvist Sweden	
09:00	A portable instrument for rolling resistance charac	terization of
	roller ski wheels	
YIA	John Andréas (Adressed: Andréas) Löfgren	Sweden
09:15	Inorganic sputtered coatings to win gold medals at win	ter olympics
YIA	Pauline Lefebvre	France
09:30	Rolling resistance coefficient of various roller-ski whe	el types and
	manufacturers	
	Anna-Mia Brulin	Sweden
09:45	Development and validation of a new standard for roll	ler-ski wheel
	classification	
	Albert Hansson	Sweden
10:00	Effect of crystallinity on wear properties of UHMWPE-s	ski base with
	varying molecular weights	
	Nazanin Emami	Sweden
10:15	On the hydrodynamic lubrication of skiing	
	Roland Larsson	Sweden

Oral sessi	on: Equipment in Ski Mountaineering Sat 1st Feb	
Chair: Mat	rej Supej Slovenia	
09:00	Mechanical efficiency - pin vs. freeride bindings	
YIA	Tobin Oliver Arden USA	
09:15	Does binding weight influence physiological response? a laboratory based study	
YIA	Sami Samuels USA	
09:30	Kinematic differences in ski mountaineering bindings during	
	treadmill skinning	
YIA	Isaac Burgess USA	
09:45	Comparison of the flex index of ski touring boots obtained using three different testing methods	
YIA	Giuseppe Zullo Italy	
10:00	Effect of ski touring binding design on load distribution between toe and heel pieces	
YIA	Lorenzo Crosetta Italy	
10:15	The effect of different widths on ski touring engineering parameters and subjective evaluations	
YIA	Matteo Rinaldi Italy	

Keynote		Sat 1 <sup>st</sup> Feb
Chair: Dave Bacharach USA		
11:00	Risk management in alpine ski racing – every piec counts!	e of the puzzle
	Jörg Spörri	Switzerland

Oral sess	sion: Biomechanics in Alpine Skiing	Sat 1 <sup>st</sup> Feb	
Chair: Jö	Switzerland		
11:45	The effect of increased gate offset in flat terrain on skier mechanics		
	for male and female world cup alpine skiers		
YIA	Ivar Hereide Mannsåker	Norway	
12:00	Age-related skiing technique differences based on quantifiable		
	movement components		
YIA	Daniel Debertin	Austria	
12:15	An EMG comparison of telemark and alpine ski turns		
	John Seifert	USA	
12:30	12:30 The influence of trunk impairment level on trunk movement during		
	para-alpine sit-skiing		
	Yusuke Ishige	Japan	

Closing C	Cerimony	Sat 1 <sup>st</sup> Feb
12:45	YIA Cerimony	
13:00	Closing Remarks	













# Acknowledgement

We extend our gratitude to all the entities and companies that supported the congress:

# **Patronage**















# **Partnership**











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