4th IRCRA International Congress
9-14th July 2018       CHAMONIX - FRANCE

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Welcome to our fourth, and now, excitingly, largest IRCRA Congress, being hosted here in Chamonix, France. As an organisation we are indebted to Pierre and the Conference Organising Committee for taking the baton and running with such vigour to create this wonderful week of knowledge exchange, collaboration, friendship, fun and most importantly, climbing!

As many of you will know, I am unable to join you on this occasion due to having a ½ knee replacement surgery only days before the start of the Congress. Obviously I would ordinarily have been very frustrated to have missed the Congress, however, these feelings are greatly heightened when I see the wonderful programme that the organising team have put together for this fourth Congress of the International Rock Climbing Research Association – IRCRA. What a fabulous event it looks to be and I hope you gain as much as I know I would have done, were I able to attend.

Given the exciting inclusion of sport climbing in the programme for the 2020 Olympic Games, it is wonderful that the Organising Committee have been able to locate the Congress around the IFSC World Cup event which takes place on the 11th, 12th and 13th July. This arrangement highlights a value that is very close to the heart of the ideals behind the IRCRA, that of bringing together, athletes/climbers, coaches, sport science practitioners and researchers. It is perhaps one of the few such Congresses in the World that breaks down barriers and brings those fascinated by the sport of climbing together to discuss, learn and enjoy new friendships and understandings. I encourage climbers, sport scientists and coaches at the Congress to set problems for researchers and researchers to seek studies that will help to improve performance for our athletes, practitioners and coaches. Then use the intervening two years to find answers and bring them to the 2020 IRCRA Congress.

This, our fourth Congress, sees further progress in the range of presentations available for delegates and just as an aim of our Congresses is to bring together practitioners and researchers, we encourage you to participate in sessions outside of your normal discipline or field. My research experience has taught me repeatedly that the answers to many of the key researcher problems require multi-disciplinary approaches and working outside the potential silos that can occur when we stick to our own disciplines.

Chamonix is a wonderful host venue, being situated in the shadows of Mont Blanc and providing excellent opportunities for hiking, mountaineering, trad climbing, sport climbing and bouldering. It will provide all delegates with wonderful distractions outside the Congress and I hope your stay and Congress experience will leave you longing for your next IRCRA event, which will be our 5th Congress to be hosted in Tokyo or Cadiz in 2020. Please enjoy this wonderful event here in Chamonix and I look forward to joining you at the 2020 Congress or before if you are visiting New Zealand in the intervening period.

Welcome to the 2018 International Rock Climbing Research Association Congress!

Nick DRAPER
IRCRA President
The International Rock Climbing Research Association (IRCRA) was formed in 2011 during our first Rock Climbing Congress which was held in Christchurch, New Zealand. The Association was launched by Franz (Tino) Fuss, Andi Schweizer, myself and our dear friend Hans-Peter Bircher, who sadly died a little while after the Congress. Hans-Peter, will always be remembered fondly by all associated with the first Congress for his wonderful, alongside his good friend Andi Schweizer, presentation on climbing injuries and general bonhomie which were the absolute makings of the Congress. The ‘crazy’ Swiss Doctors provided the founding spirit for our Association (research excellence with humour) and the over-riding intention of our Association has always bring together friends (new and old) with a love of climbing and research.

Since its inception, late in 2011, the IRCRA has provided a forum to bring together, climbers, coaches, sports science practitioners and researchers to discuss rock climbing and to learn about our sport. Our second Congress was held in Pontresina, Switzerland hosted by Andi Schweizer and Peter Wolf, and then in 2016 our third Congress hosted Phil Watts and team, took place in Telluride Colorado. Each Congress to date has seen an increase in numbers attending and an exciting growth in research interest in the sport. It is wonderful that Pierre and the Organising team in Chamonix have continued this development with the wonderful programme of research and events that are to occur during our fourth Congress.

We have been very lucky to have been able to host each of our Congresses as fabulous venues where climbing could be combined with discussion. In this fine tradition, we are lucky to have the opportunity to host our 5th Congress in either Tokyo, Japan or Cadiz, Spain and so we would very much like to canvas your thoughts as to which of these two wonderful destinations might be ideal as the venue for the 2020 Congress. Tokyo offers the opportunity to meet in the city where the 2020 Olympic Games, will have been held and see the first inclusion of rock climbing in these Games. Cadiz, however, will provide and equally atmospheric venue with a potentially more cost effective Congress. We very much wish to see the continued growth of the IRCRA Congresses and so would value your thoughts as to where we should host the next Congress. If you can email me (nick.draper@canterbury.ac.nz) or talk to any of the Executive Board (Vanesa, Tino, Andi, Pierre, Ludo or Dave) during the Congress to express your thoughts that would be a great help.

As well as the Congresses, research databases and forums on the website, the IRCRA has provided an opportunity to bring greater uniformity to reporting and to establish a multi-centre trial which assessed the effectiveness of a battery of climbing-specific tests with a sample of over 130 climbers from 6 different countries. The position statement on climbing grades was a collaboration from more than 20 researchers and was published in 2016 the Journal of Sports Technology (doi:10.1080/19346182.2015.1107081). The multi-centre trial data is currently under review.
The IRCRA provides one of the most value-for-money opportunities for a membership organisation and, as you know, requires no fees for membership. Should you as a delegate not yet have joined IRCRA please do not hesitate to send to me (nick.draper@canterbury.ac.nz) a head and shoulders photo, short biography about your involvement in climbing and climbing research, along with a contact email address and we can add you to the membership of the group. I encourage you to use the forum and research paper pages to help in your own research and look forward to seeing you at the 2020 Congress.

Nick DRAPER
IRCRA President

IRCRA Executive Committee

Nick Draper - nick.draper@canterbury.ac.nz - Chair
Vanessa España-Romero - vanesa.espana@uca.es - Vice Chair
Tino Fuss - fkfuss@swin.edu.au - Technical Expert
Andi Schweizer - andreas.schweizer@balgrist.ch - Treasurer
Pierre Legreneur - pierre.legreneur@univ-lyon1.fr - Congress Convenor
Ludovic Seifert - ludovic.seifert@univ-rouen.fr - Secretary
David Giles - d.giles@derby.ac.uk - Web
Dear member of the mountain and climbing community,

Welcome in Chamonix for the last IRCRA congress before the Olympics in Tokyo 2020. It is a great pleasure to welcome you for a week to bridge the gap between sciences and training in climbing. The whole organizing committee and our partners have been working for one year to welcome you in the best conditions. if you have any questions do not hesitate to ask our volunteers who will be at your disposal throughout the congress (yellow badges).

In partnership with the National School of Skiing and Mountaineering (ENSA), all activities of the congress will be held on their premises: amphitheater for oral sessions, card room for poster sessions and coffee breaks, restaurant for lunches, and ... hotel for those that registrated.

Some words about the congress organisation ...

To access the congress, you must wear your badge. There are 4 different badges that give you different rights:
- **Acompanying person**: you can access only to the card room for coffee break and poster sessions, as well to the ENSA restaurant for lunches (every day except rest day);
- **Full congress delegates**: you can access to all sessions, coffee breaks and lunches at the ENSA restaurant (every day except rest day);
- **Sociology day**: you can access to all sessions, coffee breaks and the lunch at the ENSA restaurant during the only sociology day (Wednesday, July 11, 2018);
- **Training day**: you can access to all sessions, coffee breaks and the lunch at the ENSA restaurant during the only training day (Saturday, July 14, 2018).

The **gala dinner** is only available to those who have paid a specific access fee. The breakfasts, the meals of the evening meals of the rest day are at your own cost.

Note that **no access** to the congress will be allowed if the payment has not been cashed by the organization (no check for non-eurozone). This payment is validated by a nominative registration certificate.

You can access the card room all week to chat or rest. Posters will be posted throughout the conference.

We wish you all an excellent conference and a wonderful stay in Chamonix,

Pierre LEGRENEUR  
Ludovic SEIFERT  
Olivier BROUSSOULOUX
4th IRCRA International Congress
9-14th July 2018       CHAMONIX - FRANCE

Scientific Committee

AUBEL, Olivier (Switzerland) - Sociology
BATOUX, Philippe (France) - Engineering
BROUSSOULOUX, Olivier (France) - Training
CROFT, James (Australia) - Motor Control
ESPAÑA-ROMERO, Vanessa (Spain) - Physiology
JONES, Gareth (UK) - Medicine
QUAINE, Franck (France) - Biomechanics
SANCHEZ, Xavier (Sweden) - Psychology
SEIFERT, Ludovic (France) - Pedagogy

Organisation Committee

LEGRENEUR, Pierre (France) - President
SEIFERT, Ludovic (France) - Secretary
BROUSSOULOUX, Olivier (France) - Treasurer

DI DOMENICO, Hervé (France) - Volunteer
GARCIA, Kathleen (USA) - Volunteer
LEVERNIER, Guillaume (France) - Volunteer
PELLISSION, Anatole (France) - Volunteer
Programme

Monday, July 09, 2018

Biomechanics & Engineering

08:00 - 09:30 Reception and registration of participants at 4th IRCRA Congress - ENSA reception hall

09:30 - 10:30 Official opening - Marie-Noëlle FLEURY, Sport Deputy Mayor of Chamonix (France) - Nick DRAPER, IRCRA President (New Zealand)

10:30 - 11:30 Opening conference - From free climbing emergence to the Olympic games recognition - Marco SCOLARIS, IFSC President (Italia)

11:30 - 13:30 Lunch - ENSA restaurant

13:30 - 14:30 Keynote - [Biom0-001] Fight gravity - Biomechanics of rock climbing - Franck QUAINÉ (France)

14:30 - 14:50 [Biom0-002] From arboreal locomotion of terrestrial tetrapods to rock climbing in humans - Pierre LEGRENEUR (France)

14:50 - 15:10 [Biom0-003] 3D motion analysis of speed climbing performance - Lionel REVERET (France)

15:10 - 15:30 [Biom0-004] Effect of climbing hold depth on biomechanical arm action during pull-ups - Laurent VIGOUCOUX (France)

15:30 - 15:50 [Biom0-005] Feasibility of a new pulley repair: a cadaver study - Isabelle SCHÖFFL (Germany)

15:50 - 16:10 [Biom0-006] Biomechanical analysis of mixed climbing performance - Missy THOMPSON (USA)

16:10 - 16:30 [Biom0-007] Instrumentation to measure contact forces in climbing - Peter WOLF (Switzerland)

16:30 - 17:00 Coffee break - ENSA card room

17:00 - 18:00 Poster session - ENSA card room

18:00 - 19:00 Keynote - [Biom0-008] Stances: is improving possible? Anchoring equalization of a stance in mountaineering and climbing activities - Vittorio BEDOJNI (Italia)

All oral presentations will take place in the ENSA Amphitheater
Tuesday, July 10, 2018 [1]

08:30 - 09:00  **Keynote** - [Med0-001] Growth plate injuries prevention regarding young climber competitors - Kathleen BOJOLY (France)
09:00 - 09:30  **Keynote** - [Med0-002] Climber’s finger injuries - François MOUTET (France)
09:30 - 09:50  [Med0-003] Sport Climbing: Medical Considerations for this New Olympic Discipline - Christoph LUTTER (Germany)
09:50 - 10:10  [Med0-004] What to examine! Yearly Examination of the Climbing National Team and its Consequences - Isabelle SCHÖFFL (Germany)
10:10 - 10:30  [Med0-005] Improving Design Characteristic to Estimate Load for Future Rock Climbing Studies - Gareth JONES (UK)
10:30 - 10:50  [Med0-006] Fatality risk in rock climbing - Volker SCHÖFFL (Germany)
10:50 - 11:10  [Med0-007] Rupture of the short head of the biceps brachii muscle belly caused by a rock climbing accident - Michael SIMON (Germany)
11:10 - 11:30  [Med0-008] Diagnosis of the A3 pulley injury using ultrasound - Isabelle SCHÖFFL (Germany)

11:30 - 13:30  Lunch - ENSA restaurant

13:30 - 13:50  [Med0-009] Climbing Injuries in Children and Adolescents - Volker SCHÖFFL (Germany)
13:50 - 14:10  [Med0-010] PIP joint contact incongruency in different grip positions as a trigger for epiphyseal fatigue fracture in adolescent climbers - Andreas SCHWEIZER (Switzerland)
14:10 - 14:30  [Med0-011] Surgical management of pip joint repetitive stress epiphyseal fracture nonunion in elite sport climbers - Yasser EL-SHEIKH (Canada)
14:30 - 14:50  [Med0-012] Lumbrical Muscle Tear - Clinical Presentation, Imaging Findings and Outcome - Christoph LUTTER (Germany)
15:10 - 15:30  [Med0-014] Conservative treatment of triple finger flexor pulley disruption - Andreas SCHWEIZER (Switzerland)

15:30 - 16:00  Coffee break - ENSA card room

16:00 - 17:00  **Keynote** - [Phy0-001] Hemodynamic responses to rock climbing - Simon FRYER (UK)
17:00 - 17:20  [Phy0-002] Association between different Rate of Force Development-measurements and climbing performance - VEREIDE Vegard (Norway)

All oral presentations will take place in the ENSA Amphitheater
Tuesday, July 10, 2018

Medicine & Physiology

17:20 - 17:40  [Phy0-003] Change in Finger Force Production and Forearm Muscle Activity in Rock Climbers during Bouts of Treadwall Climbing - Philip FERRERA (USA)

17:40 - 18:00  [Phy0-004] The effect of 10 weeks hang board training on different specific climbing tests - Espen HERMANS (Norway)

18:00 - 18:20  [Phy0-005] Individual responses to cold water immersion on handgrip performance - BALAS Jiří (Czech Republic)


18:40 - 19:00  [Phy0-007] Rock climbers’ self-reported dietary behaviours and nutritional supplementation use in the context of climbing performance - Gregory PEOPLES (Australia)

19:00 - 20:00  **High level climber testimony** - About a different life - Nina CAPREZ (Switzerland)

All oral presentations will take place in the ENSA Amphitheater.
Wednesday, July 11, 2018

08:00 - 09:00 Reception and registration of participants at the sociology day - ENSA reception hall

09:00 - 09:30 Keynote - The three dimensions of climbing sportization - Olivier AUBEL (Switzerland)

Olympisation and Artificialization

09:30 - 10:00 Keynote - The issue of climbing Olympic inclusion - Marc LE MENESTREL (Spain)
10:00 - 10:20 [SocO-004] The introduction of Sport Climbing at Tokyo 2020's Olympic Games: analysis of the controversy in France - Augustin ROGEAUX (France)

10:20 - 10:30 Discussion
10:30 - 11:00 Coffee break - ENSA card room
11:00 - 12:30 Round table - Olympisation: issues, questions and concerns

12:30 - 14:00 Lunch - ENSA restaurant

Climbing, Risk and Health

14:00 - 14:20 [SocO-005] Climbing: a variety of sport practices and alcohol consumptions - François FELIU (France)
14:20 - 14:40 [SocO-007] An Examination of Climbers' Information-Seeking Behaviors for Injury Care and Prevention - Tallie CASUCCI (USA)
14:40 - 15:00 [SocO-008] Climbing as a worksite intervention: An strategy for climbing walls acceptance in business in México - Aline GONZÁLEZ-MORENO (Mexico)

Climbing Merchandisation and Touristification

15:00 - 15:30 Keynote - Climbing tourism experience - Jillian RICKLY (UK)
15:30 - 15:50 [SocO-006] Collecting the Local History of Climbing in Utah: Looking back, moving forward - Tallie CASUCCI (USA)

16:20 - 16:30 Discussion
16:30 - 17:00 Coffee break - ENSA card room
17:00 - 18:30 Round table - The Legal, Economic and Spatial Stakes of Climbing as a Tourism-Market

All oral presentations will take place in the ENSA Amphitheater
### Thursday, July 12, 2018

**PROVISIONAL PROGRAMME (LOCAL TIME)**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td><strong>Wednesday 11 July</strong></td>
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<tr>
<td><strong>SPEED</strong></td>
<td>9.00-10.00 Registration speed world cup</td>
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<td>10.30 Technical Meeting speed world cup</td>
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<td>11.00 Warming zone opening</td>
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<td>12.00 Practice time women then men</td>
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<td>15.00 Qualification speed women then men</td>
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<tr>
<td><strong>LEAD</strong></td>
<td>17.00-18.00 Registration lead world cup</td>
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<td>18.30 Technical Meeting lead word cup</td>
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<td><strong>LEAD &amp; SPEED</strong></td>
<td>18.45 Cocktail for all national teams</td>
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<td>19.15 Opening ceremony (competition venue)</td>
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<td>Highly recommended for:</td>
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<td>- one athlete per team (flag bearer)</td>
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<td>- the 8 first men and women of the 2018 world cup lead ranking present in Chamonix</td>
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<tr>
<td></td>
<td>- the 8 first men and women of the 2018 world cup speed ranking present in Chamonix</td>
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<td><strong>Thursday 12 July</strong></td>
<td>Competition venue - Parc des Sports</td>
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<tr>
<td><strong>LEAD</strong></td>
<td>08.00 Warming Zone Open</td>
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<td>09.30-17.00 Qualification Men and Women</td>
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<tr>
<td><strong>SPEED</strong></td>
<td>19.00 Warming zone opening</td>
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<td>20.30 Finals men &amp; women</td>
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<td>21.30 Award ceremony for speed</td>
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<td><strong>Friday 13 July</strong></td>
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<tr>
<td><strong>LEAD</strong></td>
<td>8.00-9.00 Isolation Zone men &amp; women</td>
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<td>10.00-12.30 Semi Finals men &amp; women</td>
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Friday, July 13, 2018

Psychology, Motor Control & Pedagogy

08:30 - 09:30 Keynote - [PsyO-001] Beyond mental skills training: creating psychologically robust climber-athletes - Rebecca WILLIAMS (UK)
09:50 - 10:10 [PsyO-003] Is vigilance related to rock climbing performance? - Inmaculada GARRIDO PALOMINO (Spain)
10:10 - 10:30 [PsyO-004] To change or not to change – that is the question - Stephan KÜNZELL (Germany)
10:30 - 10:50 [PsyO-005] Sense of coherence of people practicing indoor climbing at various levels of advancement - Patryk CZERMAK (Poland)
10:50 - 11:10 [PsyO-006] Prevalence of disordered eating among international sport lead rock climbers - Lanae JOUBERT (USA)
11:10 - 11:30 [PsyO-007] Applied sport psychology in elite climbing: working with athletes, coaches, and a federation - Olivier ROUQUETTE (Belgium)

11:30 - 13:30 Lunch - ENSA restaurant

13:30 - 15:30 Poster session - ENSA card room

15:30 - 16:00 Coffee break - ENSA card room

16:00 - 17:00 Keynote - [MCPO-001] Perceptual motor skills in climbing: expertise and learning - Ludovic SEIFERT (France)
17:00 - 17:20 [MCPO-002] Measuring fluidity in climbing - James CROFT (Australia)
17:20 - 17:40 [MCPO-003] Case Study of a Climbing Activity as an Educational Tool for Primary School Children: looking for significative learning experiences through climbing games and the innovative use of the climbing space - Maria-Julia EPELDE (Spain)
17:40 - 18:00 [MCPO-004] Acute response of handgrip strength, oxygen saturation, heart rate, and two-point discrimination after rock and ice climbing - Burak GÜRER (Turkey)
18:00 - 18:20 [MCPO-005] Climbers’ learning dynamics: an exploratory study - Guillaume HACQUES (France)
18:20 - 18:40 [MCPO-006] Behavioural repertoire influences the rate and nature of learning in climbing: Theoretical and practical implications - Dominic ORTH (Netherlands)
18:40 - 19:00 [MCPO-007] Finger-tip strength supports flexibility in visual search during on-sight preview by experienced climbers: Preliminary findings - Nikki VAN BERGEN (Netherlands)

All oral presentations will take place in the ENSA Amphitheater
Saturday, July 14, 2018

08:00 - 09:00 Reception and registration of participants at the training day - ENSA reception hall

09:00 - 09:15 Presentation of the day - Olivier BROUSSOULOUX (France)

09:15 - 09:25 Welcome - Pierre YOU, President of the FFME (France)

09:25 - 10:00 Introductory conference - Training in sport climbing: past, present and the Olympic constraints - Pierre-Henry PAILLASSON, FFME (France)

10:00 - 11:00 Keynote - [TrainO-001] Training for international speed climbing events - Sylvain CHAPELLE (France)

11:00 - 12:00 Keynote - [TrainO-002] Enhancing workspace and use of momentum in climbing - Udo NEUMANN (Germany)

12:00 - 13:30 Lunch - ENSA restaurant

13:30 - 13:50 [TrainO-005] The effects of a weighted dead-hang training program on grip strength and endurance in expert climbers with different levels of strength - Eva LOPEZ-RIVERA (Spain)

13:50 - 14:10 [TrainO-006] The rate of force development: a new biomechanical key factor in climbing - Guillaume LEVERNIER (France)

14:10 - 14:30 [TrainO-007] Rock climbing training and cancer survivorship - a pilot study - Scott DRUM (USA)

14:30 - 14:50 [TrainO-008] Profile of brazilian and british climbers: training and injuries - Alessandra MENDES (Brazil)

14:50 - 15:10 [TrainO-009] Analysis of the performance structure of the Olympic combined climbing format - Claudia AUGSTE (Germany)

15:10 - 15:45 Coffee break - ENSA card room

15:45 - 16:45 Keynote - [TrainO-003] Competition climbing – developing future champions - Urs STÖCKER (Germany)

16:45 - 17:45 Keynote - [TrainO-004] Training for international combined events - HIROSHI Yasui (Japan)

17:45 - 18:45 General discussion

18:45 - 19:15 [TrainO-010] Qualitative analysis of two of 2017’s greatest ascents and a proposed conceptual model for maximum-difficulty sport climbing and energy system requirements - Eric HÖRST (USA)

19:15 - 19:30 Keynote - [TokyOO-001] Climbing circumstances in Japan and upcoming Congress in 2020 - Shinji MIZUMARA (Japan)

20:30 - 24:00 Gala dinner - Alpina Hotel

All oral presentations will take place in the ENSA Amphitheater
**Poster sessions [1]**

**Biomechanics** (Monday, July 09, 2018 - 17:00-18:00)
[BiomP-001] Is the ratio between finger/wrist flexor and extensor strength the same in climbers as in healthy non-climbers? - Danny BROWN (UK)
[BiomP-002] A potential classification schema and management approach for individuals with A2 flexor pulley strain - Carrie COOPER (USA)
[BiomP-003] Interpretation of hip mechanical energy in official speed climbing route - Pierre LEGRENEUR (France)
[BiomP-004] Role of lower and upper limbs in dyno maneuver - Pierre LEGRENEUR (France)
[BiomP-005] Biomechanical analysis of Hamate hook fractures: An anatomical study - Christoph LUTTER (Germany)
[BiomP-006] Prediction of contact and muscle forces from kinematics data only - application to 3d simulation of climbing motion - Lionel REVERET (France)

**Training** (Monday, July 09, 2018 - 17:00-18:00)
[TrainP-001] What is your rating of perceived pump? A novel, subjective rock climbing training tool - Scott DRUM (USA)
[TrainP-002] Climber Performance Rating - A new Approach to Rating and Ranking in the Climbing World - Ulf FUCHSLEUGER (Switzerland)
[TrainP-003] Training behaviors among a heterogeneous sample of female climbers and boulderers - Abigail LARSON (USA)
[TrainP-004] The acute effects of weighted pull-ups on campus board power and power endurance exercises - Krystof SAS-NOWOSIELSKI (Poland)

**Medicine** (Friday, July 13, 2018 - 13:30-15:30)
[MedP-001] Malformations, injuries, and adaptations in the fingers of adolescent competitive rock climbers: an evaluation with follow up by ultrasound and MRI - Kathleen GARCIA (USA)
[MedP-002] Treatment of finger problems in climbers with the local-osteopathic Isele-method: a pilot study - Klaus ISELE (Austria)
[MedP-005] Epiphyseal stress fractures in the fingers of adolescents: Biomachanics, Pathomechanism, Risk factors, and Ultrasound - Isabelle SCHÖFFL (Germany)

All posters will be displayed permanently throughout the week in the ENSA card room where all coffee breaks will take place.
Poster sessions [2]


Physiology (Friday, July 13, 2018 - 13:30-15:30)
[PhyP-001] Optimizing Muscular Strength-to-Weight Ratios in Rock Climbing - Aman ANDERSON (USA)
[PhyP-002] A longitudinal assessment (10-years) of bone mineral density in rock climbers - Juan Manuel ESCUDIER VÁZQUEZ (Spain)
[PhyP-003] Prediction of maximal on-sight performance during rock climbing camp - Artur MAGIERA (Poland)
[PhyP-004] Climbing-specific fitness profiles and determinants of performance in youth rock climbers - Jeanne NICHOLS (U.S.A)
[PhyP-005] Forearm isometric fatigue-resistance in climbers is superior to resistance trained athletes and aerobically trained controls when matched for grip strength - Gregory PEOPLES (Australia)

Psychology (Friday, July 13, 2018 - 13:30-15:30)
[PsyP-001] Differences in perception of body weight and fitness components on performance in rock climbers - Gina Blunt GONZALEZ (USA)
[PsyP-002] Exploring the cognitive and affective benefits of indoor and outdoor climbing - Maria Stefania IONEL (Romania)
[PsyP-003] Pain modulation in rock climbers: influence of pain coping strategies and appraisals - Jessie MCDougALL (Canada)
[PsyP-004] The visual search strategies underpinning effective observational analysis in the coaching of climbing movement - James MITCHELL (UK)
[PsyP-005] Psychological variables involved in climbing. Operationalizing expert's knowledge - Miguel SANTOLAYA (Spain)
[PsyP-006] Enactive analysis of climbers’ activity in learning situations - Nadège ROCHAT (France)

Motor control & Pedagogy (Friday, July 13, 2018 - 13:30-15:30)
[MCPP-001] Establishing a global scale for assessing lead climbing performance - Nicola TAYLOR (UK)
[MCPP-002] The effect of additional load and maximal fatigue on perceived horizontal reach- and grasp-ability in a whole body reaching task - Andrew WALSH (Australia)

All posters will be display permanently throughout the week in the ENSA card room where all coffee breaks will take place.
**Communications**

**Biomechanics & Engineering**

**Keynotes**

**Oral & Poster presentations**
[BiomO-007] WOLF, Peter, SIMPSON, Robert, HERRMANN, Rudolf, GERIG, Nicolas, WITTMANN, Frieder. Instrumentation to measure contact forces in climbing.
[BiomP-001] BROWN, Danny & SCHÖFFL, Volker. Is the ratio between finger/wrist flexor and extensor strength the same in climbers as in healthy non-climbers?

[BiomP-006] REVERET, Lionel, QUAINÉ, Franck, COURTEMANCHE, Simon & KRY, Paul. Prediction of contact and muscle forces from kinematics data only - application to 3d simulation of climbing motion.

MEDICINE

Keynotes


Oral & Poster presentations

[MedO-003] LUTTER, Christoph, EL-SHEIKH, Yasser, SCHÖFFL Isabelle & SCHÖFFL Volker. Sport Climbing: Medical Considerations for this New Olympic Discipline.


[MedO-010] SCHWEIZER, Andreas & BÄRTSCHI Natalie. PIP joint contact incongruity in different grip positions as a trigger for epiphyseal fatigue fracture in adolescent climbers
[MedP-001] GARCIA, Kathleen, JARAMILLO, D. & RUBESOVA, E. Malformations, injuries, and adaptations in the fingers of adolescent competitive rock climbers: an evaluation with follow up by ultrasound and MRI.

**Motor Control & Pedagogy**

*Keynote*

Oral & Poster presentations


[MCPO-003] EPELDE, Maria Julia. Case Study of a Climbing Activity as an Educational Tool for Primary School Children: looking for significative learning experiences through climbing games and the innovative use of the climbing space.


[MCPO-007] VAN BERGEN, Nikki, KNOBELSDORFF, Marlene, VAN DER KAMP, John, SEIFERT, Ludovic & ORTH, Dominic. Finger-tip strength supports flexibility in visual search during on-sight preview by experienced climbers: Preliminary findings.


[MCPP-002] WALSH, Andrew, SEIFERT, Ludovic, BUTTON, Chris & CROFT, James. The effect of additional load and maximal fatigue on perceived horizontal reach- and grasp-ability in a whole body reaching task.

**Physiology**

Keynote

F[Phy0-001] FRYER, Simon M. Hemodynamic responses to rock climbing.

Oral & Poster presentations


[Phy0-004] HERMANS, Espen, SAETERBAKKEN, Atle, NORD, Ivar, VEREIDE, Vegard & ANDERSEN, Vidar. The effect of 10 weeks hang board training on different specific climbing tests.


[PhyP-005] PEOPLES, Gregory, NOLAN, Jordan & MCLENNAN, Peter. Forearm isometric fatigue-resistance in climbers is superior to resistance trained athletes and aerobically trained controls when matched for grip strength.


**Psychology**

Keynote

Oral & Poster presentations


[PsyO-003] GARRIDO PALOMINO, Inmaculada, FRYER, Simon, GILES, Dave & ROMERO-ESPAÑA, Vanessa. Is vigilance related to rock climbing performance?

[PsyO-004] KÜNZELL, Stephan, THOMICZEK, Johannes, WINKLER, Marvin & AUGSTE, Claudia. To change or not to change – that is the question.

[PsyO-005] CZERMAK, Patryk & WIESNER, Wojciech. Sense of coherence of people practicing indoor climbing at various levels of advancement.


[PsyO-007] ROUQUETTE, Olivier Y. Applied sport psychology in elite climbing: working with athletes, coaches, and a federation.


[PsyP-002] IONEL, Maria Stefania. Exploring the cognitive and affective benefits of indoor and outdoor climbing.


[PsyP-004] MITCHELL, James, GILES, David & TAYLOR, Nicola. The visual search strategies underpinning effective observational analysis in the coaching of climbing movement.


Sociology

Keynotes

[SocO-001] AUBEL, Olivier. The three dimensions of climbing sportization.


Oral & Poster presentations
[SocO-005] FELIU, François, BONNET, Christophe, LE HENAFF, Yannick & Clémence PIEDAGNEL. Climbing: a variety of sport practices and alcohol consumptions.

Training

Keynotes
[TrainO-001] CHAPELLE, Sylvain. Training for international speed climbing events.
[TrainO-004] YASUI, Hiroshi. Training for international combined events.

Oral & Poster presentations
[TrainO-005] LOPEZ-RIVERA, Eva & GONZALEZ-BADILLO, Juan. The effects of a weighted dead-hang training program on grip strength and endurance in expert climbers with different levels of strength.
[TrainO-008] MENDES, Alessandra, LOPES, Rodrigo & HONICK, Stuart. Profile of brazilian and british climbers: training and injuries.
[TrainO-010] HÖRST, Eric. Qualitative analysis of two of 2017’s greatest ascents and a proposed conceptual model for maximum-difficulty sport climbing and energy system requirements.

**TOKYO 2020**

**Keynotes**
[TokyO-001] MIZUMARA, Shinji. Climbing circumstances in Japan and upcoming Congress in 2020
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4th IRCRA International Congress
9-14th July 2018       CHAMONIX - FRANCE

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KAMINSKY, Katie
PEOPLES, Gregory

Austria
GAETNER, Hanspeter
ISELE, Klaus
MERTZ, Gunnar

Belgium
ROUQUETTE, Olivier

Brazil
MENDES, Alessandra

Canada
BOURASSA-MOREAU, Félix
CETNAR, Julia
EL-SHEIKH, Yasser
MCDOUGALL, Jessy

Czech Republic
BALAS, Jiří
GAJDOSIK, Jan

Equator
ROJAS, Andrea
MARTINEZ, Eduardo

Finland
BERTLING, Enni
TURKULAINEN, Santeri
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9-14th July 2018       CHAMONIX - FRANCE

Mexico

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Nepal

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