Biennial report 2021
Study Group on Capillaroscopy and Microcirculation in Rheumatic Diseases (SG MC/RD)

Title of the study group: EULAR Study Group on Capillaroscopy and Microcirculation in Rheumatic Diseases (EULAR SG MC/RD)

Study Group Leader’s name: Vanessa Smith; email: vanessa.smith@ugent.be
Date of annual report submission: 30th March 2021

A. Introduction
A.1. Why a Study group on Microcirculation in Rheumatic Diseases?
The EULAR Study Group on Microcirculation in Rheumatic Diseases (SG MC/RD) aims to build an international network of expert centres to facilitate collaboration and exchange knowledge within Europe and provide a platform on which the investigators can:
1. Study (micro)vascular mechanisms involved in the progression of RD with (micro)vascular involvement.
2. Develop natural history investigations operating across existing cohorts of European centres interested in the cooperation and implementation of diagnostic tools on microcirculation.
3. Identify through statistical analysis (based on large samples), models based on (micro)vascular assessment tools to predict disease progression and outcome.
4. Evaluate the microvascular effects of novel target strategies within specific RD populations.

A.2. Who we are
The EULAR Study Group on Microcirculation in Rheumatic Diseases was accepted by the EULAR Executive committee in March 2014 and is being supervised by EULAR Committee on Investigative Rheumatology, currently chaired by Prof. X. Mariette. The study group first convened at EULAR 2014 consisting of 12 founding members (Chair: Prof. V. Smith; Co-Chairs: Prof. A. Herrick, Prof. M. Cutolo, Prof. A. Sulli and other founding members: Prof. Y. Allanore, Prof. O. Distler, Prof. N. Damjanov, Prof. U. Müller-Ladner, Dr. W. Hermann, Prof. I. Murat, Dr. V. Riccieri and Prof. AE. Voskuyl) and 28 in members (from which 11 of 5 non-European countries: USA, Brasil, South Africa, Turkey and Japan). Anno 2021 the number of members has risen to over 130 members (from 19 European and 18 non-European countries).
B. Summary of EULAR SG MC/RD activities in 2019-2020

B.1. PROJECTS WITH PUBLICATION

- **SG MC/RD 7:** A cross-sectional study to evaluate the role of dermatoscopy as a further screening tool in Raynaud's phenomenon, versus the “gold standard tool”, i.e. the nailfold videocapillaroscope (NVC), has been performed on 100 consecutive dermatoscopic images, and has been published:
  

- **SG MC/RD 8:** This is the first systematic review investigating literature on capillaroscopy in childhood-onset systemic lupus erythematosus (cSLE), using standardised capillaroscopic description (i.e. using the consented standardised definitions of the EULAR SG MC/RD). This systematic review has been published:
  

- **SG MC/RD 11:** An international joint standardisation effort between experts in the field of capillaroscopy/microcirculation of the EULAR SG MC/RD and the Scleroderma Clinical Trials Consortium resulted in a consensus paper on capillaroscopic image acquisition and analysis, different capillaroscopic techniques, normal and abnormal capillaroscopic characteristics and their meaning, scoring systems and reliability of image acquisition and interpretation. The fruit of this collaboration was published:
  

- **SG MC/RD 15:** For the first time, a clinical expert based “Fast Track” decision algorithm has been developed to differentiate a "non-scleroderma pattern" from a "scleroderma pattern" on capillaroscopic images, demonstrating excellent reliability when applied by capillaroscopists with varying levels of expertise versus the principal expert and corroborated with external validation. This international standardisation effort has been published:
  

- **SG MC/RD 17:** This systematic review provides a time-related overview of the different techniques used to assess the microcirculation in systemic sclerosis (SSc). This systematic review has been published as a congress abstract:
  

- **SG MC/RD 18:** This is the first systematic literature review investigating the role of NVC in SSc related pulmonary arterial hypertension (PAH), using standardised capillaroscopic description (i.e. using the consented standardised definitions of the EULAR SG MC/RD). This systematic review has been published:
  

- **SG MC/RD 19:** A three-step web-based Delphi consensus on minimum reporting standards...
for NVC was performed among experts in microcirculation/capillaroscopy of the EULAR SG MC/RD and the Scleroderma Clinical Trials Consortium. A reporting checklist of 33 items to provide guidance to improve and standardize the NVC methodology to be applied in future clinical research studies has been published: Ingegnoli F, et al. Reporting items for capillaroscopy in clinical research on musculoskeletal diseases: a systematic review and international Delphi consensus. Rheumatology (Oxford). 2021;60(3):1410-1418.

- **SG MC/RD 20**: This is the first systematic literature review investigating the role of NVC in SSc related interstitial lung disease (ILD), using standardised capillaroscopic description (i.e. using the consented standardised definitions of the EULAR SG MC/RD). This systematic review has been published: Smith V, et al. May capillaroscopy be a candidate tool in future algorithms for SSC-ILD: Are we looking for the holy grail? A systematic review. Autoimmun Rev. 2020;19(9):102619.

- **SG MC/RD 21**: The goal of this pilot study was to examine the use of Laser Speckle Contrast Analysis (LASCA) in rheumatoid arthritis (RA), more specifically whether the expected increased peripheral blood perfusion (PBP) in active synovitis in RA patients can be detected by LASCA. The results of this pilot study in 30 RA patients and 44 healthy controls has been recently published: Vanden Bulcke M, Vanhaecke A, Deschepper E, Cutolo M, Jacques P, Smith V. Laser speckle contrast analysis in rheumatoid arthritis: a pilot study. Clin Exp Rheumatol. 2021. [Online ahead of Print].

### B.2. ONGOING PROJECTS

- **SG MC/RD 4**: An observational international multicentre study for the assessment, definition of morphologic nailfold capillary pattern in patients with systemic lupus erythematosus (SLE).
- **SG MC/RD 6**: Nailfold capillaroscopy in paediatric rheumatic diseases and healthy children.
- **SG MC/RD 9**: To step forward to the aim to identify through statistical analysis (based on large samples), models based on (micro)vascular assessment tools to predict disease progression and outcome, a large multicentre study to evaluate of the role of capillaroscopy in the prediction of severe organ involvement was set up also in close liaison with EUSTAR.
- **SG MC/RD 14**: A qualitative systematic review of studies reporting nailfold capillaroscopy procedures in rheumatology.
- **SG MC/RD 16**: A reliability study of LASCA in black Africans with SSc.
C. Courses, meetings and presentations on behalf of the EULAR SG MC/RD in 2019-2020

- **EULAR 2019** – June 2019, Madrid (Spain)
  - Practical skills session on Capillaroscopy (June 12th and June 14th 2019)
  - EULAR SG MC/RD meeting: see addendum 1 for the agenda (June 13th 2019)

- **ACR 2019** – November 2019, Atlanta (USA)
  - EULAR SG MC/RD meeting: see addendum 2 for the agenda (November 10th 2019)
  - Study group on Capillaroscopy (November 12th 2019)

Due to the COVID-19 pandemic, EULAR SG MC/RD courses, meetings and presentations were cancelled. More specifically, the biennial Course on Capillaroscopy in Rheumatic Diseases was to be held in Amsterdam (the Netherlands) from Thursday, 3 September – Saturday, 5 September 2020 (see addendum 3) and has been rescheduled to be held during the EULAR 2021 Virtual Congress, on Friday, 4 June 2021 (1:30 – 3:00 PM).
D. Entire publication list of the EULAR SG MC/RD


10. Smith V, Vanhaecke A, Vandecasteele E, Guerra MG, Paolino S, Melsens K, Cutolo M. Nailfold Videocapillaroscopy in Systemic Sclerosis-related Pulmonary Arterial Hypertension: A


Addendum 1:

EULAR Study Group on Microcirculation in Rheumatic Diseases (EULAR SG MC/RD)  
Thursday June 13th, 2019      5.00 – 7.00 PM**  
ROOM A10.05

** Please note that due to sparsity of time slots the EUSTAR meeting will be held concomitantly. We do understand colleagues to move back and forth in between the two meetings.

A. Chair Report (10’)
   • Welcome
   • Report on the actual status of the SG_MC/RD position and EULAR requirements (including poster and official report)
   • Report on the SG_MC/RD structure and members. Published articles. Ongoing studies. Studies in which can be engaged.

B. Project Reports
   • K Melsens, I Foeldvari, M Cutolo, F Ingegnoli and V Smith (10’):
     Capillaroscopy in juvenile rheumatic patients - SG_MC/RD6: update
   • F Ingegnoli (15’):
     A qualitative systematic review of studies reporting nailfold capillaroscopy procedures in rheumatology - SG_MC/RD14
   • D Schonenberg (15’):
     Capillaroscopy in childhood-onset systemic lupus erythematosus (cSLE) - SG_MC/RD8

C. News from EULAR SG MC/RD members
   • A Vanhaecke (15’):
     Role of capillaroscopy in PAH (systematic review)
   • M Michalska-Jakubus (15’):
     Imbalanced serum levels of Ang1, Ang2 and VEGF in systemic sclerosis: integrated effects on microvascular reactivity  
     (Microvasc Res. 2019 May 7;125:103881)
   • A Herrick (15’):
     Best digits to evaluate in performing capillaroscopy  

D. Teaching
   • M Cutolo, S Soldano and V Smith (15’):
     Very New aspects on Pathophysiology of SSc with microcirculation as starring role  

E. General Discussion
Addendum 2:
EULAR Study Group on Microcirculation in Rheumatic Diseases (EULAR SG MC/RD)
Sunday, November 10th, 2019 – time:12.30 - 02.30 PM
ROOM: **Redwood Room** (Omni Hotel, North Tower, 1st floor)

A. **Chair Report** (10’)
   • Welcome
   • Report on the actual status of the SG_MC/RD position and EULAR requirements (including poster and official report)
   • Report on the SG_MC/RD structure and members. Published articles. Ongoing studies. Studies in which can be participated

B. **Project Reports**
   • K Melsens, I Foeldvari, M Cutolo, F Ingegnoli and V Smith (10’):
     *Capillaroscopy in juvenile rheumatic patients - SG_MC/RD6: update*

   • F Ingegnoli (15’):
     *Delphi on minimum reporting standards for nailfold capillaroscopy - SG_MC/RD19*

C. **News from study group members**
   • K Melsens (15’):

   • M Vonk (15’):
     *Hit hard and early. The effect of high dose methylprednisolone on nailfold capillary changes and biomarkers in early SSc: a 12-week randomized explorative double-blind placebo-controlled trial.*

   • B Garro, K Espejo, A Vanhaecke and V Smith(15’):
     *The “Fast Track Algorithm” in Peru*

D. **Teaching**
   • M Cutolo (15’):

   • A Herrick (15’):
     *Automated structure and flow measurement - a promising tool in nailfold capillaroscopy.* (Microvasc Res. 2018;118:173-177.)

E. **New proposals for EULAR SG MC/RD projects**
   • G Riemekasten, S Ohrndorf (10’):
     *A new composite score to predict digital ulcers in SSc (CIP DUS) including clinical data, imaging techniques and patient history: multicentre validation*

F. **General Discussion**
Addendum 3:

9th EULAR Course on
Capillaroscopy in Rheumatic Diseases
Amsterdam, the Netherlands
Thursday, 3 September – Saturday, 5 September 2020
ORGANISATION & COMMITTEE

Scientific Organisers

*Maurizio Cutolo, MD (Italy)*
Director Research Laboratory and Academic Division of Clinical Rheumatology Department of Internal Medicine University of Genova, IRCCS San Martino Polyclinic Italy

*Vanessa Smith, MD, PhD (Belgium)*
Department of Rheumatology, Ghent University Hospital, Ghent, Belgium; Department of Internal Medicine, Ghent University, Ghent, Belgium; Unit for Molecular Immunology and Inflammation, VIB Inflammation Research Center (IRC), Ghent, Belgium.

Faculty Members

*Will be announced closer to the course days. Possible variations until September 2020.*

Organising secretariat

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Switzerland
T: +41 44 716 30 30
F: +41 44 716 30 39
W: [www.eular.org](http://www.eular.org)
E: education@eular.org
GENERAL INFORMATION

Course venue & hotel
NH Amsterdam Schiphol Airport
Kruisweg 495. Hoofddorp, 2132 NA Amsterdam - The Netherlands
https://www.nh-hotels.com/hotel/nh-amsterdam-schiphol-airport

Course dates
Thursday, 3 September 2020 (Start at 12:50) – Saturday, 5 September 2020 (End at 13:00)

Official language
English

Participants
- 130 participants maximum
- Application requirements: No prerequisites.
- Target audience: Medical professions: MD - Rheumatology, Allergology and Clinical Immunology, Dermatology and Venereology, Cardiology and Angiology, Internal Medicine, Geriatrics, Pediatrics

Registration
Course registration page: https://esor.eular.org/course/view.php?id=153

Please login to your EULAR School of Rheumatology account to register. If you do not have a School account, you will need to create one before you register.

Registration deadline: 31 July 2020
Early registration is advisable. Number of participants is limited.
Bursary

EULAR grants 15 - 20 bursaries in the amount of EUR 500 each, please apply within the registration system with your motivation letter, your CV and (if any) publication list.

Application deadline for bursary: 5 July 2020
Notification: end of July 2020

Course fee

1300 € (VAT included), package includes:

**Thursday, 03 September 2020**
- Full access to the 9th EULAR Course on Capillaroscopy and Rheumatic Diseases activities
- Accommodation in a single room at the designated hotel
- Afternoon coffee break
- Lunch and Dinner

**Friday, 04 September 2020**
- Full access to the 9th EULAR Course on Capillaroscopy and Rheumatic Diseases activities
- Accommodation in a single room at the designated hotel, breakfast included
- Morning and afternoon coffee breaks
- Lunch and dinner

**Saturday, 05 September 2020**
- Full access to the 9th EULAR Course on Capillaroscopy and Rheumatic Diseases activities
  - Breakfast included
- Morning coffee break

*The course fee quoted is a package price; therefore, the usage of the accommodation is highly recommended. For participants who would prefer not to utilise the accommodation, a discount of 100 € will be given.*
COURSE DESCRIPTION

The early diagnosis of Connective Tissue Diseases has been one of the most important achievement in Rheumatology and imaging advanced technology has helped to reach this result. The aim of the 9th intensive and interactive EULAR Course on Capillaroscopy (CAP) is to provide all participants with an update on the power of the safe and non-invasive nailfold videocapillaroscopy (NVC) technique in the field of rheumatic diseases, in particular for the early diagnosis of the scleroderma spectrum disorders, its predictability and prognostic value, as well as its role as a tool for the therapeutic follow up.

ACR/EULAR stated in the 2013 guidelines for classification criteria of systemic sclerosis (SSc): "Capillaroscopy is now widely used, and considering the value of magnified nailfold visualization in the diagnosis and management of SSc, these new criteria may encourage acquisition of this skill by physicians caring for SSc patients". However, microvascular emerging NVC patterns observed in other connective tissue diseases will be described and discussed, such as in psoriasis, psoriatic arthritis, antiphospholipid syndrome, systemic lupus erythematosus and myositis.

Therefore, the course is structured for a progressive learning, training and testing the achievements by the participants. The EULAR course on NVC, with more than 15 years of experience (first on 2004), has been successfully tested for both beginners and already trained operators in microcirculation investigations, by over 1010 total participants from almost 64 different countries.

Interestingly, in the last 5 years, more than 425 publications on CAP have become available on PubMed where a total of 1450 papers are reported since 1947.

Participants to the EULAR CAP Course will be fully involved in interactive theoretical and practical sessions (Learning and Testing sessions, including televoting at the beginning and at the end), engaging a large number of rheumatic patients with different pathologies.

Updated clinical sessions concerning the diagnostic/prognostic value of NVC in diseases such as systemic sclerosis and the effects of targeted therapies on microcirculation and immune-inflammatory reaction will represent a stimulating gym based on large clinical cases discussion. Links between the CAP patterns and biomarkers such as autoantibodies (including functional) will also be updated.

In particular, reading and scoring (manual and the brand new automated systems) of the videocapillaroscopic images of living patients, will be discussed, including the predictive value to identify possible clinical complications (i.e. digital ulcers or pulmonary arterial hypertension, etc.).

The new guidelines and results regarding the aspects of CAP in pediatric population will be reported. Further sessions will include recent international studies (CAP study) about new predictive models or index based on capillaroscopic analysis.

New sessions on practical evaluation of the peripheral blood flow by laser doppler and LASCA imaging have been introduced. In addition, practical sessions on skin ultrasound (US) evaluation in scleroderma will be also available and will be combined with the severity of the videocapillaroscopic images (patterns) in the same living patients.

Several monitors will show live on TV screens the practical sessions with patients. Interactive sessions with evaluation of the learning status will be organised at the end of each session. Important links between CAP, Laser blood flow analysis and clinical results of therapies, will be presented and discussed.

At the end of this top Course, which is supported by a tutorial team formed by some of the best world experts on the matter, the participants will be able to use the capillaroscopy for their day-to-day diagnosis, staging and follow-up, in particular of patients affected by scleroderma spectrum disorders.

A syllabus of the course with selected slides will be released to all participants after the course in the participants account of the EULAR School of Rheumatology website, after filling in the course overall evaluation form.

Learning objectives

Updating on the power of the safe (the most safe) and non-invasive nailfold videocapillaroscopy (NVC) technique in the field of rheumatic diseases, in particular for the (early) diagnosis of the scleroderma spectrum disorders and several other connective tissue diseases, as well as its predictability and prognostic value and tool for the therapeutic follow up in systemic sclerosis.

Certification

A certificate of attendance will be available after the course on your EULAR School user account. 100% course attendance is required.
## Detailed Programme

**Day 1 – Thursday, 3 September 2020**

<table>
<thead>
<tr>
<th>Time</th>
<th>Type of session &amp; Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:00 – 13:00</td>
<td>PARTICIPANT REGISTRATION &amp; LIGHT FOOD AVAILABLE</td>
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<tr>
<td>12:50 – 13:00</td>
<td><strong>Introduction:</strong> EULAR CAP Course after 15 years</td>
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<tr>
<td>13:00 – 13:45</td>
<td><strong>LECTURE</strong> Micro- and macrovascular modifications in lungs affected by connective tissue diseases</td>
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<tr>
<td>13:45 – 14:30</td>
<td><strong>LECTURE</strong> Microvascular damage and progressive fibrosis: a matter for advanced targeted therapies in fibrotizing diseases</td>
</tr>
<tr>
<td>14:30 – 15:15</td>
<td><strong>LECTURE</strong> Combination treatments for clinical complications comprising micro- and macrovascular involvement in connective tissue diseases</td>
</tr>
<tr>
<td>15:15 – 15:45</td>
<td><strong>LEARNING AND TESTING</strong> <em>(Televoter before and after)</em> Updating on the role of capillaroscopy in presence of the Raynaud’s phenomenon</td>
</tr>
<tr>
<td>15:45 – 16:15</td>
<td><strong>LEARNING AND TESTING</strong> <em>(Televoter before and after)</em> How to choose the best device(s) when evaluating the microcirculation in connective tissue diseases</td>
</tr>
<tr>
<td>16:15 – 16:30</td>
<td><strong>COFFEE BREAK</strong></td>
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<tr>
<td>16:30 – 17:00</td>
<td><strong>LEARNING AND TESTING</strong> <em>(Televoter before and after)</em> Fast track algorithm: How to differentiate a &quot;scleroderma pattern&quot; from a &quot;non-scleroderma pattern&quot;</td>
</tr>
<tr>
<td>17:35 – 18:00</td>
<td><strong>LEARNING AND TESTING</strong> <em>(Televoter before and after)</em> *(Semi)-quantitative manual and automated scoring systems in videocapillaroscopy</td>
</tr>
<tr>
<td>18:00 – 19:30</td>
<td><strong>PRACTICAL</strong> Practical session analysing the microvasculature by videocapillaroscopy: TV-assisted presentation of clinical cases with living patients from the podium</td>
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<tr>
<td>20:00</td>
<td><strong>DINNER</strong></td>
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## Day 2 – Friday, 4 September 2020

<table>
<thead>
<tr>
<th>Time</th>
<th>Type of session &amp; Title</th>
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<tbody>
<tr>
<td>08:30 – 09:10</td>
<td>LEARNING AND TESTING (Televoter before and after) Capillaroscopy advances in the scleroderma spectrum disorders, including overlap syndromes and myositis – Clinical cases</td>
</tr>
<tr>
<td>09:10 – 09:50</td>
<td>LEARNING AND TESTING (Televoter before and after) Microvascular changes as observed by capillaroscopy in non-scleroderma spectrum disorders, including systemic lupus erythematosus and antiphospholipid syndrome - Clinical cases</td>
</tr>
<tr>
<td>09:50 – 10:30</td>
<td>LEARNING AND TESTING (Televoter before and after) Microcirculatory change evaluation and its productivity for the skin ulcers and lung involvement detection in systemic sclerosis</td>
</tr>
<tr>
<td>10:30 – 11:00</td>
<td>COFFEE BREAK</td>
</tr>
<tr>
<td>11:00 – 11:30</td>
<td>LECTURE The crucial role of the microvascular analysis and capillaroscopy in improving the new EULAR and ACR guidelines for the classification of systemic sclerosis</td>
</tr>
<tr>
<td>11:30 – 12:00</td>
<td>LEARNING AND TESTING (Televoter before and after) Capillaroscopic advances in psoriasis versus psoriatic arthritis and rheumatoid arthritis – Clinical cases</td>
</tr>
<tr>
<td>12:00 – 12:40</td>
<td>LECTURE Functional analysis of the peripheral blood flow associated with the capillaroscopic evaluation</td>
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<tr>
<td>12:40 – 14:10</td>
<td>LUNCH</td>
</tr>
<tr>
<td>14:10 – 14:40</td>
<td>PRACTICAL “Ultrasound of the skin and other organs in systemic sclerosis with different NVC patterns” TV-assisted Clinical cases</td>
</tr>
<tr>
<td>14:40 – 15:20</td>
<td>LEARNING AND TESTING (Televoter before and after) The emerging links between autoantibodies (including functional ones) and capillaroscopic analysis: their pathophysiological role and value for the diagnosis of the scleroderma spectrum diseases - Clinical cases</td>
</tr>
<tr>
<td>15:20 – 16:00</td>
<td>PRACTICAL Practical session combining laser doppler/imaging analysis (LASCA) versus capillaroscopy and skin US analysis in the same patients in TV-assisted living cases of systemic sclerosis</td>
</tr>
<tr>
<td>16:00 – 16:30</td>
<td>COFFEE BREAK</td>
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### Day 2 – Friday, 4 September 2020 [continue]

<table>
<thead>
<tr>
<th>Time</th>
<th>Type of session &amp; Title</th>
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</table>
| 16:30 – 18:00 | **PRACTICAL**  
The possible role of capillaroscopy in clinical case resolution and treatment follow-up |
| 18:00 – 19:30 | **PRACTICAL**  
Practical session with capillaroscopic analysis of clinical cases with living patients by participants (Tutor supported):  
Rotating small groups and Tutors meet the reality with patients |
| 20:00     | **DINNER**                             |

### Day 3 – Saturday, 5 September 2020

<table>
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<tr>
<th>Time</th>
<th>Type of session &amp; Title</th>
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| 08:30 – 09:10 | **LECTURE**  
All ins and outs of vasodilation in systemic sclerosis |
| 09:10 – 09:50 | **LECTURE**  
The practical role of capillaroscopy in evaluating the effects of therapies in systemic sclerosis |
| 09:50 – 10:30 | **LECTURE**  
Raynaud’s in children: the size of the problem and new guidelines |
| 10:30 – 11:00 | **LEARNING AND TESTING**  
*(Televoter before and after)*  
Advances on capillaroscopy in pediatric patients |
| 11:00 – 11:30 | **PRACTICAL**  
The most common mistakes and pitfalls to be avoided in reading the capillaroscopic images |
| 11:30 – 12:00 | **LECTURE**  
The capillaroscopic report: data storing and data diffusion |
| 12:00 – 13:00 | **Conclusions**  
and the continuous update by the EULAR Study Groupon Microcirculation in Rheumatic Diseases |
| 13:00     | **DEPARTURE**                       |

*Any changes to the scientific programme or to the list of speakers are possible until the date of course. Further updates will be published on the EULAR School of Rheumatology homepage [https://esor.eular.org/course/view.php?id=153](https://esor.eular.org/course/view.php?id=153)*