

Statistical Techniques & Tools in MS Research

MONDAY, 8 JUNE 2026

08.45	Welcome & Introduction <i>Maria Pia Sormani (Genoa, IT), Marcello Moccia (Naples, IT), Jaume Sastre - Garriga (Barcelona, ES)</i>
09.00 - 10.30	Session 1: Basic concepts - Statistics
09.00	The hypothesis test: The meaning of p value, sample size and power. How to interpret statistical results of a study.
09.30	Statistical tests: non-parametric vs. parametric approaches, univariate and multivariate methods
10.00	Discussion
10.30 - 11.00	Coffee Break
11.00 - 12.30	Session 1 (continued): Basic concepts - Study design
11.00	Epidemiological studies
11.30	Clinical trials: From animal models to phase 3. The standard designs in MS
12.00	Discussion
12.30 - 14.00	Lunch Break

14.00 - 15.30	Session 2: Observational studies: Study design and methods
14.00	Propensity scores and methods for adjusting baseline confounders
14.30	Impact of missing data and methods for missing data imputation
15.00	Discussion
15.30 - 16.00	Coffee Break
16.00 - 17.00	Practical Session 1
16.00	Practical Session 1 - Data collection with RedCap
17.00	End of Day 1
19.00	Dinner

TUESDAY, 9 JUNE 2026

09.00 - 10.30 Session 3: Beyond conventional trial designs

09.00 Adaptive designs

09.30 Meta - analyses and network meta - analyses

10.00 Discussion

10.30 - 11.00 Coffee Break

11.00 - 12.30 Session 4: Beyond conventional trial designs

11.00 Pragmatic trials

11.30 Artificial intelligence methodology

12.00 Discussion

12.30 - 14.00 Lunch Break

14.00 - 15.30 Session 5: Beyond clinical trials

14.00 Synthetic data and federated learning

14.30 Handling safety data in clinical trial

15.00 Discussion

15.30 - 16.00 Coffee Break

16.00 - 18.00 Practical Sessions 2 & 3

16.00 Practical Session 2 - Statistics with R and ChatGPT

17.00 Practical Session 3 - Imputing missing data

18.00 End of Day 2

19.00 Summer School Dinner

WEDNESDAY, 10 JUNE 2026

08.30 - 10.30 Practical Sessions 4 & 5

08.30 Practical Session 4 - How to write the statistical section of a paper

09.30 Practical Session 5 - Calculation of CDW and PIRA
by a unified tool

10.30 - 11.00 Coffee Break

11.00 - 12.30 Hands - on Sessions 1 & 2

Session 1: T-test, regression, logistic regression (with Jamovi)

Session 2: Cox with time dependent covariate,
mixed models (with R)

12.30 - 13.30 Closing session

12.30 Future of statistics in MS Research

13.00 Discussion & Wrap-up
*Maria Pia Sormani (Genoa, IT), Marcello Moccia (Naples, IT),
Jaume Sastre - Garriga (Barcelona, ES)*

13.30 Lunch and individual departure