III MTN WORKSHOP
MUSCLE INJURIES
AND REPAIR:
CURRENT TRENDS
IN RESEARCH

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Assessment and follow-up of muscle injuries by segmental bioimpedance

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What is Whole-Body and Segmental Bioimpedance?

Mono-frequency measurement at 50 kHz.

BIVA

Z/H = (R/H, Xc/H)

R/H (resistance): provides information of the hydration state.
Xc/H (reactance): information of the structure of soft tissues.

RXc-GRAPH

BIA-101 analyzer (AKERN-RJL, Italy).

R = edema, extra-cellular fluid.
Xc = cell membrane damage.
F.C. Barcelona, 2nd football team (n=20)

Right Quadriceps

Right hamstrings

Right calf

Left Quadriceps

Left hamstrings

Left calf

ORGANIZERS:
Segmental bioimpedance vector in right calf injury

1st degree right calf injury

3rd degree right calf injury
1) Athletes develop a well adaptation to the training loads without a modification in the components of bioimpedance vector (R/H and Xc/H).
2) In elite well trained athletes their muscle groups are symmetrical (right and left sides), thus each athlete is its own reference for future comparisons.
3) We expect a change in the two components of bioimpedance vector (R/H and Xc/H) in front of a muscle injury (2\textsuperscript{nd} and 3\textsuperscript{rd} muscle strain) and only a change in R/H in front of a 1\textsuperscript{st} degree muscle injury.
4) Not all the sports have the same pattern of bioimpedance vector by muscle group.