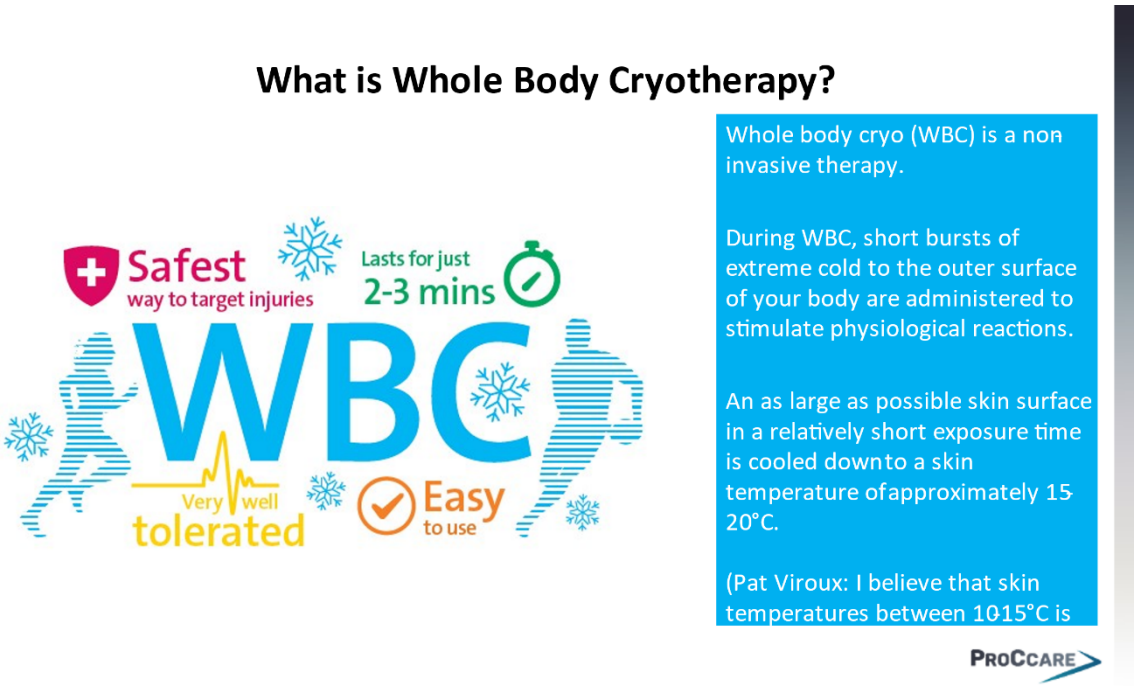
Although many manufacturers "claim" that the importance of whole body cryo is the reached "room temperature" or "real temperature", we know that this is not the case. These are more claims by the manufacturers to support their devices.



Whole body cryo is :

- ⇨ <u>Achieving "real" and "optimal" skin temperatures.</u>

Although we do not know exactly what the "best" skin temperatures are, most "good" publications tell us that they are between 15 and 20°C. From these publications and research, we know that by reaching these temperatures it is possible to achieve good (optimal?) results. From these publications and research we know that by reaching such skin temperatures in a relatively short period of time, beneficial physiological processes occur in the human body.

However, with a better understanding of whole-body cryo, we believe that skin temperatures between 10 and 15°C would be even better....., perhaps even 5-10°C. BUT we know that at skin temperatures of 5°C and lower, the danger and risk of frostbite become quite high, so the ideal skin temperature to achieve for cryo in a safe manner is probably 8-10°C. More research in the future will tell us.

Last but not least, such skin temperatures can be achieved in rooms of -110°C, -85°C, -75°C..... even at -30°C. Of course, in -110°C rooms, the impact of opening and closing the door is much less than in single rooms as they have one or two pré-rooms. Therefore, time is also an important parameter that must be taken into account. When using -30°C, you should also include a wind chill factor or an air velocity factor.

Achieving these skin temperatures does NOT ONLY depend on the units, room temperatures and times, BUT ALSO DEPENDS A LOT ON THE PERSONAL CHARACTERISTICS OF THE PERSON ATTENDING the session. This is not only mentioned in several wbc publications:

Research tells us that a one-size-fits-all treatment limits the effectiveness of cold application...

"Effects of sex and anthropometrics should be considered when designing WBC research or treatment protocols (Hammond et al. 2014)."

Thermography study of skin response due to whole-body-cryotherapy.
Cholewka et al. – Skin Research and Technology, 2012

Skin temperature may be dependent on patient individual features like BMI, which also may have potential significance in the effects of therapy."

Whole- and partial-body cryostimulation/cryotherapy: Current technologies and practical applications.
Bouzigon et al. 2016 – Journal of Thermal Biology

"It would be of interest to consider the anthropometric and gender characteristics of patients/subjects to determine individualized exposure protocols (duration and temperature)."

Individualising the exposure of −110 ° C whole body cryotherapy: The effects of sex and body composition.
Cuttel et al. – Journal of Thermal Biology, 2017

Practitioners need to be cognisant of sex related differences as they are 'pivotal 'when using whole body cryotherapy.

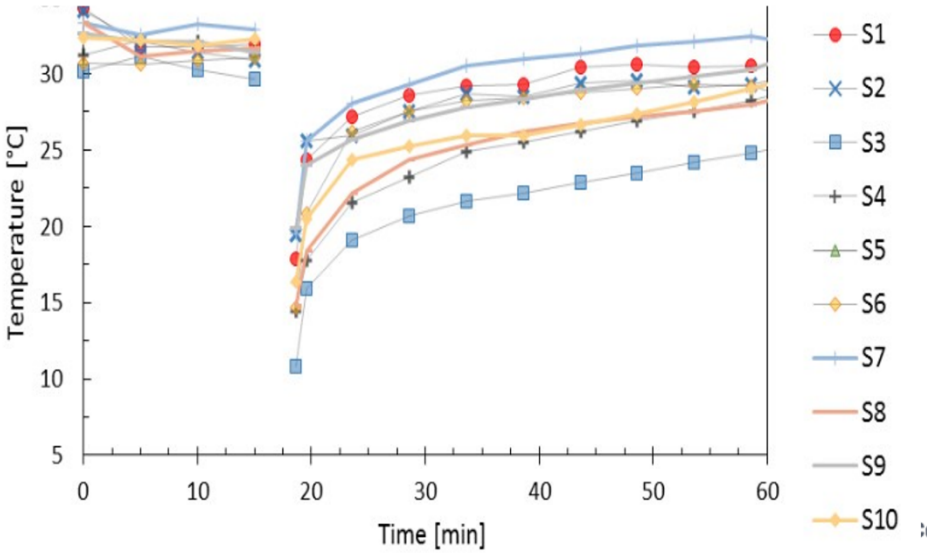
Our data suggests that sex related differences do have an influence on thermoregulatory responses after WBC.

Water Immersion for Athletic Recvery: One Size does NOT fit all.
J. Stephens, Australian Institute of Sports – IJSPR, 2016

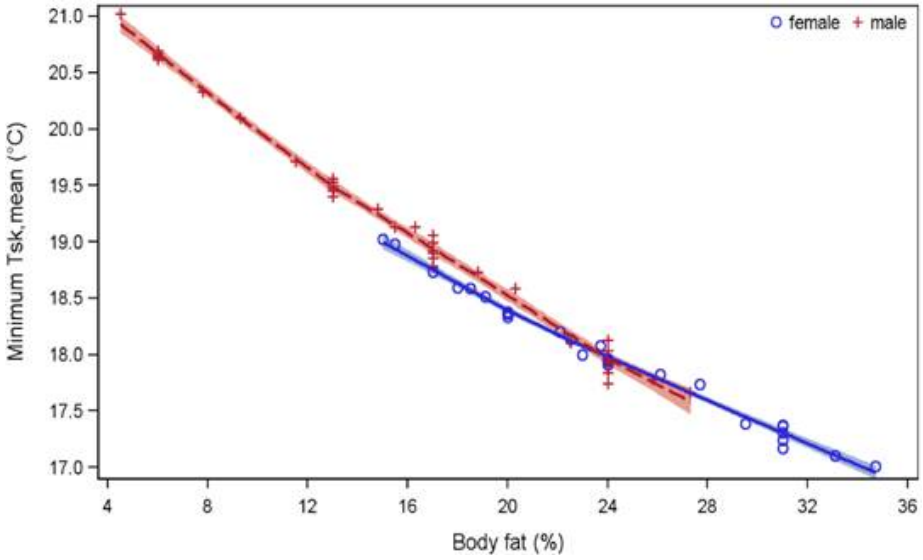
Goal of Application – Dose response related – Timing – Body Temperature – Age related - Gender
Regional and whole body composition should be assessed by an accepted technique prior to prescribing individual protocols.

But also in our own research done in several units:

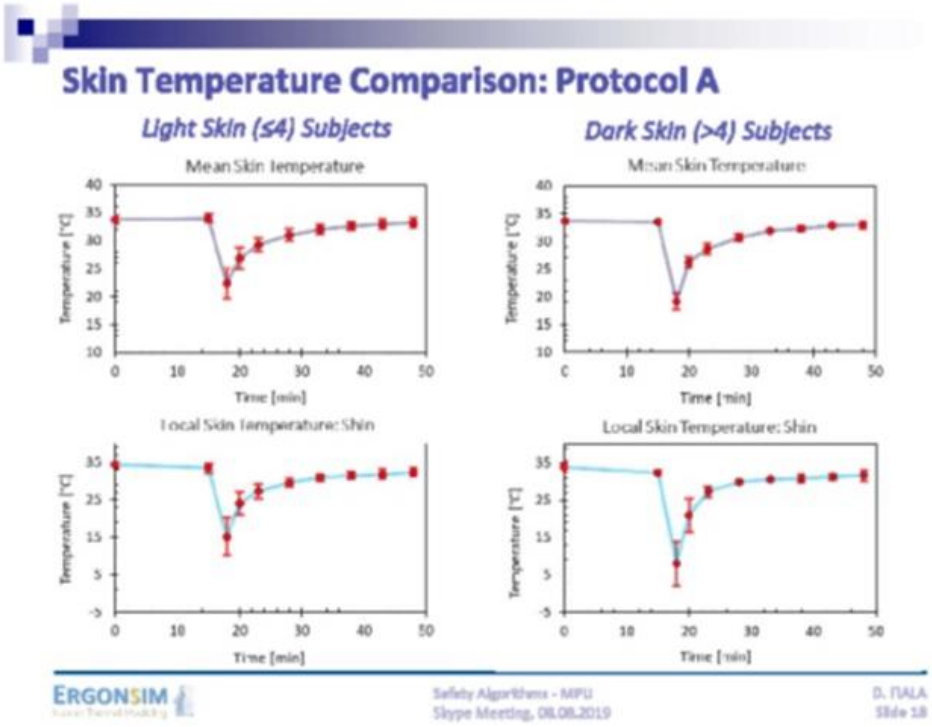
Data Postprocessing: Overall Body Temperatures



A BIG DIFFERENCE BETWEEN MEN AND WOMEN



A BIG DIFFERENCE BETWEEN LIGHT AND DARK SKINNED PEOPLE

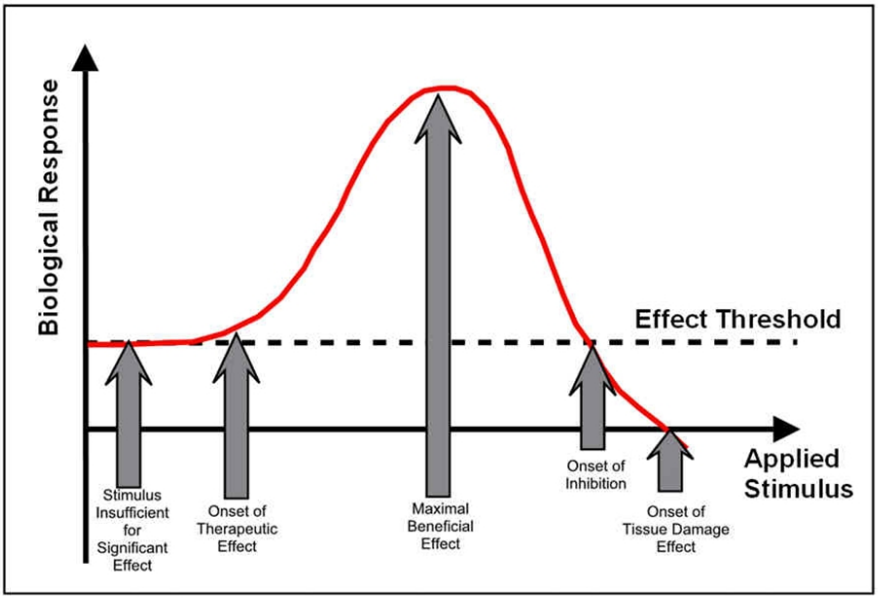


THERE IS A BIG DIFFERENCE BETWEEN TOP ATHLETES AND PEOPLE IN POOR CONDITION,AGE LEVEL,FAT%.....

WHAT DOES THIS MEAN?

When using the same duration for 10 people in the same unit, some will receive an "underdose" (not enough cooling to trigger optimal physiological processes), others an overdose (i.e. inhibition of physiological processes).

THIS IS KNOWN AS THE ARNDT-SHULTZ PRINCIPLE, WHICH IS WELL KNOWN (or should be) IN THE USE OF THERAPEUTIC MODALITIES.



WHAT OUR METHOD DOES IS VERY SIMPLE:

Based on the personal characteristics of each individual, and after validation of our algorithm for a specific unit, we can define the time needed for an individual that is necessary IN THIS SPECIFIC UNIT to reach? FOR EACH INDIVIDUAL (!), the same skin temperature between 15-20°C or between 8-10°C IN A SAFE MANNER.

And you will see that in the future this principle will become more and more important, more and more dominant.

- If people are asked to "pay" for a service, you must at least guarantee that you are giving them "correct and safe" cooling doses.

- If people are being asked to support elite athletes and/or professional football players, then you must assure them that they are providing optimal and safe cooling doses.

- If people are being asked to invest a lot of money in units, you need to assure them that they can provide the right dose of cooling in a safe manner to their customers.