SC/Tetra

Cradle
MSC Software Company

JOS (Joint System Thermoregulation-Model)

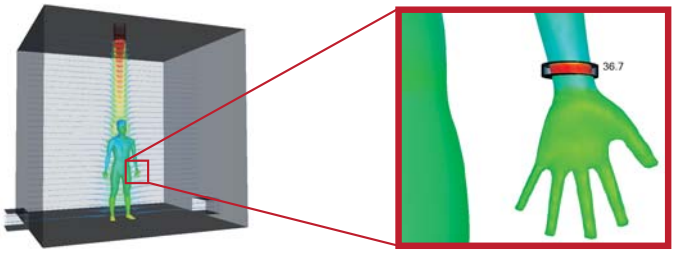
Perform thermoregulation analysis using CFD and JOS

What is JOS?

JOS computes the temperature and quantity of perspiration of a human body. JOS models a human body by dividing it into seventeen body segments to simulate the morphological and physiological characteristics and thermoregulation function of each segment by solving heat balance equations.

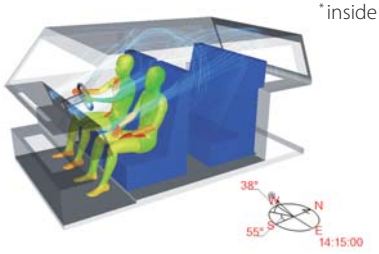
Seventeen body segments:
A more detailed prediction of temperature distribution within the human body is made possible by modeling each body segment. JOS and its revised version, JOS-2, are available.

Analysis of Human Body Temperature While Wearing a Wearable Device



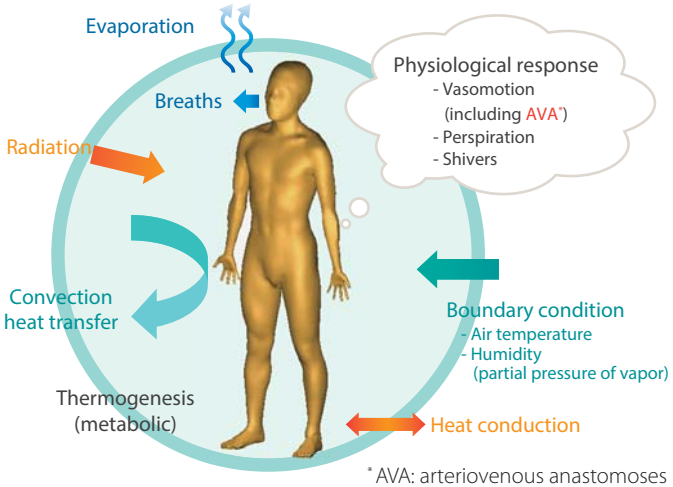
*indoor

Analysis of Human Body Temperature



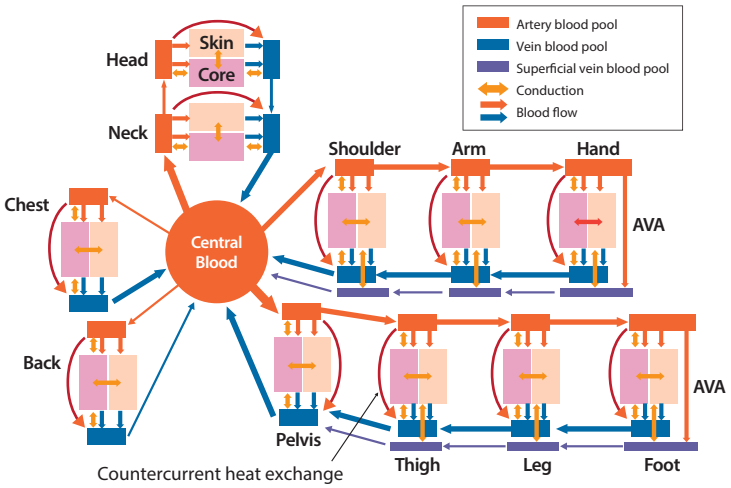
*inside vehicle

Factors Considered in the JOS Model



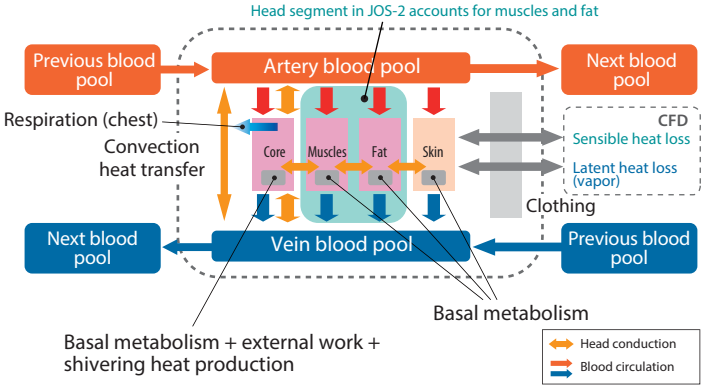
*AVA: arteriovenous anastomoses

Heat Exchange Within a Body

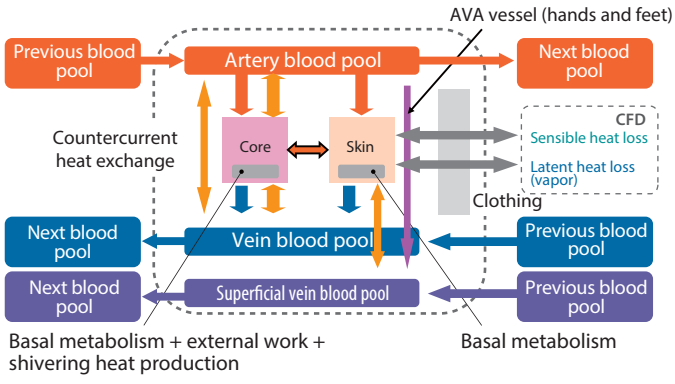


Heat Exchange Within a Body Segment

• Segments other than the limb



• Limb segment



Notes

The JOS function can be used to perform human body thermoregulation analysis in non-uniform thermal environments such as a vehicle interior or a semi-enclosed outdoor space. These are difficult scenarios to evaluate using traditional thermoregulation indices. They are also difficult to experimentally evaluate when the human subject is wearing wearable devices. JOS-2 uses a head segment consisting of four layers to account for the head's high heat capacity. Using JOS-2 engineers can conduct faster analyses with improved accuracy.