

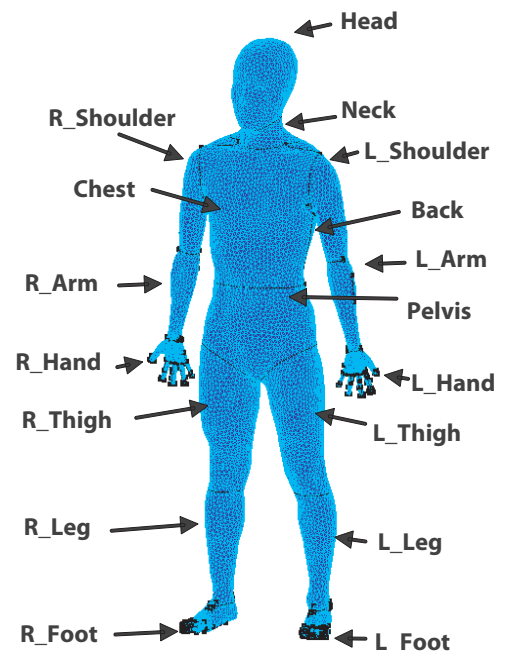
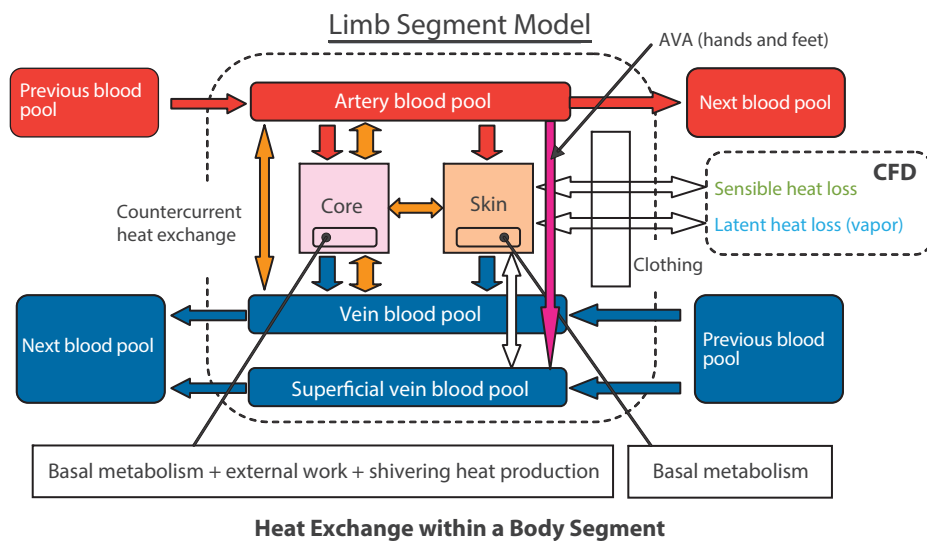
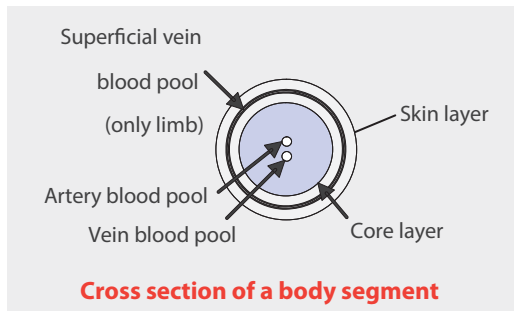
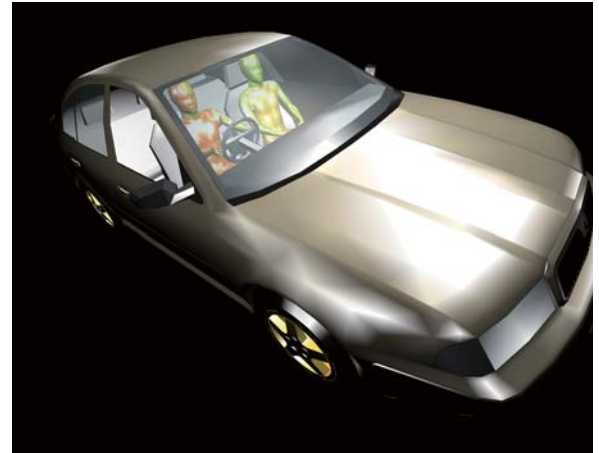
# Human Body Thermoregulation Model - "JOS"

SC/Tetra Function

JOS (Joint System Thermoregulation Model) Developed by Professor Shin-ichi Tanabe, Waseda University, Japan

JOS computes the temperature of a human body. JOS models a human body by dividing it into seventeen body segments. Each individual body segment consist of a core layer and a skin layer. In the center of the core layer are both an artery blood pool and a vein blood pool used for modeling the vascular system.

In addition, a superficial vein blood pool is modeled in the skin layer of limb segments.



**Flowchart of JOS-CFD calculation**

**SC/Tetra CFD Software** (CFD Boundary Conditions at Body Surface)

- $T_{cl}$  Temperature at clothing surface
- $P_w$  Partial pressure of water vapor at clothing surface
- $T_{sk}$  Temperature at skin surface
- $Q_x$  Mass flux of water vapor by evaporation

**Joint System (JOS) Thermoregulation Model** (JOS Boundary Conditions)

- 1) Body 17 segments
- 2) Age
- 3) Sex
- 4) Body fat proportion
- 5) Metabolic rate
- 6) Type of clothes
- 7) Contact surface B.C.

**SC/Tetra-JOS User-Friendly Interface**

Segment Name	Uncontact Region	Contact Region
HEAD	Head	unspecified
NECK	Neck	unspecified
CHEST	Chest	unspecified
BACK	Back	unspecified
PELVIS	Pelvis	unspecified
L_SHOULDER	L_Shoulder	unspecified
L_ARM	L_Arm	unspecified
L_HAND	L_Hand	unspecified
R_SHOULDER	R_Shoulder	unspecified
R_ARM	R_Arm	unspecified
R_HAND	R_Hand	unspecified
L_THIGH	L_Thigh	unspecified
L_LEG	L_Leg	unspecified
L_FOOT	L_Foot	unspecified
R_THIGH	R_Thigh	unspecified
R_LEG	R_Leg	unspecified
R_FOOT	R_Foot	unspecified