Supplementary Material

# Supplementary Data

For male groups, multiple stepwise regression was carried out between Tt and correlated indexes (body mass, BMI, waist circumference, hip circumference, SBD, DBP, UA and TG), the regression equation was established as below:

Ŷ=36.997-0.063X1-0.025X2-0.002X3

Where:

Ŷ represents Tt (℃);

X1 represents BMI (kg/m2);

X2 represents waist circumference (cm);

X3 represents UA (mmol/L).

It can be considered that BMI (X1), waist circumference (X2) and UA (X3) are the main factors that affect the temperature of the anterior trunk. R2 (coefficients of determination) =0.464. It is indicated that BMI, waist circumference and UA can explain the variation of Tt of this sample by 46.4%.

For female groups, multiple stepwise regression was carried out between Tmean and correlated indexes.

1. Regression equation between Tf and height & body mass:

Ŷ=27.78+0.031X.

Where:

Ŷ represents Tf;

X represents height.

R2=0.052, P=0.028.

The height could explain 5.2% of the variation of Tf.

1. Regression equation of Trp and age, body mass, BMI, waist circumference, hip circumference, FPG, TG and HDL-C:

Ŷ=27.79+0.064X1-1.831X2+0.049X3.

Where:

Ŷ represents Trp (℃);

X1 represents age (years);

X2 represents HDL-C (mmol/L);

X3 represents body mass(kg).

R2=0.322, P=0.000.

The age, HDL-C and body mass are the main factors that affect Trp. These factors above could explain 32.2% of the variation of Trp of this sample.

1. Regression equation of Tlp and age, body mass, BMI, waist circumference, hip circumference, FPG, UA, TG and HDL-C:

Ŷ=26.891+0.064X1-1.826X2+0.058X3.

Where:

Ŷ represents Tlp (℃);

X1 represents age (years);

X2 represents HDL-C (mmol/L);

X3 represents body mass (kg).

R2=0.346, P=0.000.

The age, HDL-C and body mass are the main factors that affect Tlp.These could explain 34.6% of the variation of Tlp of this sample.

1. Regression equation of Trf and age, body mass, BMI, waist circumference, FPG, UA, TG and HDL-C:

Ŷ=29.059+0.069X1-1.606X2+0.058X3-0.05X4.

Where:

Ŷ represents Trf (℃);

X1 represents age (years);

X2 represents HDL-C (mmol/L);

X3 represents body mass (kg);

X4 represents waist circumference (cm).

R2=0.474, P=0.000.

The age, HDL-C body mass and waist circumference are the main factors that affect Trf. And the factors above could explain 47.4% of the variation of Trf of this sample.

1. Regression equation of Tlf and age, body mass, BMI, waist circumference, FPG, TG and HDL-C:

Ŷ=27.085+0.053X1-1.298X2+0.028X3.

Where:

Ŷ represents Tlf (℃);

X1 represents age (years);

X2 represents HDL-C (mmol/L);

X3 represents body mass (kg).

R2=0.371, P=0.000.

The age, HDL-C and body mass are the main factors that affect Tlf and could explain 37.1% of the variation of Tlf of this sample.

1. Regression equation of Tt and age, height, body mass, BMI, waist circumference, hip circumference, DBP, FPG, UA, TG and HDL-C:

Ŷ=30.727-0.095X1-0.015X2+0.030X3.

Where: Ŷ represents Tt (℃);

X1 represents BMI (kg/m2);

X2 represents age (years);

X3 represents height (cm).

R2=0.385, P=0.000.

This shows that BMI, age and height are the main factors that affect Tt and could explain 38.5% of the variation of Tt of this sample.

# Supplementary Tables

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| **Supplementary Table 1** Comparison of Tmean of each ROI between different genders (℃; ‾x±s) | | | | | | | |
| Groups | n | Tf | Tt | Trp | Tlp | Trf | Tlf |
| Male groups (M0-M3) | 91 | 33.29±0.61\*\* | 32.13±0.96\*\* | 31.46±1.80\*\* | 31.32±1.80\*\* | 29.48±1.73\* | 29.54±1.79\* |
| Female groups (F0-F3) | 93 | 32.80±0.72 | 32.61±1.09 | 30.46±2.14 | 30.20±2.19 | 28.94±1.48 | 28.93±1.48 |

Note: Compared with female groups \**P*<0.05, \*\**P*<0.01

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| **Supplementary Table 2** Comparison of Tmean of each ROI between normal groups and MS groups (℃; ‾x±s) | | | | | | | |
| **Groups** | **n** | **Tf** | **Tt** | **Trp** | **Tlp** | **Trf** | **Tlf** |
| Normal male (M0) | 26 | 33.14±0.72 | 33.12±0.50 | 30.95±2.16 | 30.81±2.18 | 29.26±1.95 | 29.33±2.07 |
| MS male (M3) | 31 | 33.40±0.53 | 32.00±0.73\*\* | 32.06±1.46 | 31.87±1.51▲ | 29.74±1.70 | 29.77±1.71 |
| *P* |  | 0.128 | 0.000\*\* | 0.053 | 0.036▲ | 0.136 | 0.154 |
| Normal female (F0) | 50 | 32.76±0.84 | 33.14±0.67 | 29.88±1.98 | 29.61±1.94 | 28.43±1.32 | 28.39±1.28 |
| MS female (F3) | 12 | 32.93±0.36 | 32.33±0.79 | 32.49±1.56 | 32.54±1.53 | 30.89±1.14 | 30.82±1.10 |
| *P* |  | 0.282 | 0.004▲▲ | 0.000▲▲ | 0.000▲▲ | 0.000\*\* | 0.000\*\* |

1 Two-sample t-test was applied, α=0.05, \*\**P*<0.01.

2 Wilcoxon rank- sum test was applied, α=0.05, ▲P<0.05.

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| **Supplementary Table 3** Correlation analysis between Tt and measurement data & laboratory data in male group | | | | | | |
| **Measurement data** | **Pearson Correlation Coefficient (r)** | ***P*** |  | **Laboratory data** | **Pearson Correlation Coefficient (r)** | ***P*** |
| Age (years) | -0.106 | 0.318 |  | FPG (mmol/L） | -0.093 | 0.381 |
| Height (cm) | 0.006 | 0.956 |  | UA (μmol/L） | **-0.310\*\*** | 0.003 |
| Body mass (kg) | **-0.606\*\*** | 0.000 |  | TC (mmol/L） | -0.08 | 0.453 |
| BMI (kg/m2) | **-0.650\*\*** | 0.000 |  | TG (mmol/L） | **-0.366\*\*** | 0.000 |
| Waist circumference (cm) | **-0.647\*\*** | 0.000 |  | HDL-C (mmol/L） | 0.184 | 0.082 |
| Hip circumference (cm) | **-0.538\*\*** | 0.000 |  | LDL-C (mmol/L） | -0.046 | 0.67 |
| SBP (mmHg) | **-0.352\*\*** | 0.001 |  |  |  |  |
| DBP (mmHg) | **-0.320\*\*** | 0.002 |  |  |  |  |

\*\* *P*<0.01

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| **Supplementary Table 4** Unary linear regression of Tf, Trp, Tlp with correlated measurement data & laboratory data | | |
| Tf with DBP |  | *P*=0.014 |
| R2=0.066 |  |  |
| Trp with BMI |  | *P*=0.023 |
| R2=0.057 |  |  |
| Tlp with BMI |  | *P*=0.025 |
| R2=0.055 |  |  |

Note: R2 represents the coefficient of determination

# Supplementary Figure



**Supplementary Figure 1** (a) Unary linear regression analysis and scatter plot of Tf to DBP of male groups. (b) Unary linear regression analysis and scatter plot of Trp to BMI of male groups. (c) Unary linear regression analysis and scatter plot of Tlp to BMI of male groups