**Table S1**. Correlation between the measured $VO_{2max}$, anthropometrics, and variables acquired from the submaximal tests

| | $VO_{2max}$ | Sex | Age | Weight | Height | BMI | WC | Resting HR |
|---|---|---|---|---|---|---|---|---|
| $VO_{2max}$ ($mL \cdot kg^{-1} \cdot min^{-1}$) | - | | | | | | | |
| Anthropometrics | | | | | | | | |
| Sex | -0.641** | - | | | | | | |
| Age | -0.607** | 0.156 | - | | | | | |
| Weight | 0.201 | -0.614** | -0.017 | - | | | | |
| Height | 0.594** | -0.748** | -0.391** | 0.725** | - | | | |
| BMI | -0.276* | -0.154 | 0.378** | 0.725** | 0.114 | - | | |
| WC | -0.209 | -0.336** | 0.366** | 0.820** | 0.300* | 0.854** | - | |
| $3MST_{20}$ | | | | | | | | |
| HR recovery at 30 s | -0.581** | 0.527** | 0.231 | -0.097 | -0.400** | 0.212 | 0.179 | 0.758** |
| Average HR at 30 and 60 s | -0.564** | 0.503** | 0.275* | -0.114 | -0.417** | 0.203 | 0.170 | 0.813** |
| HR recovery at 60 s | -0.522** | 0.457** | 0.311* | -0.126 | -0.417** | 0.186 | 0.153 | 0.839** |
| $3MST_{30}$ | | | | | | | | |
| HR recovery at 30 s | -0.682** | 0.549** | 0.441** | -0.197 | -0.564** | 0.252* | 0.124 | 0.671** |
| Average HR at 30 and 60 s | -0.673** | 0.542** | 0.446** | -0.212 | -0.575** | 0.239* | 0.118 | 0.703** |
| HR recovery at 60 s | -0.648** | 0.521** | 0.439** | -0.223 | -0.572** | 0.220 | 0.108 | 0.719** |
| Six-minute walk test | | | | | | | | |
| Distance walked (m) | 0.671** | -0.506** | -0.513** | 0.259* | 0.567** | -0.142 | -0.116 | -0.308* |

$VO_{2max}$, maximal oxygen consumption; BMI, body mass index; WC, waist circumference; HR, heart rate; $3MST_{20}$, 3-min step test using 20.3-cm step box height; $3MST_{30}$, 3-min step test using 30-cm step box height. * $p < 0.05$; ** $P < 0.01$.

**Table S2**. Correlations between the measured $VO_{2max}$ and model-predicted $VO_{2max}$ in the 3-min step test using a 20-cm step height. The prediction equation model was developed using randomly selected two-third of the participants, and their value was compared with that of the non-selected one-third of the participants. The same methods were repeated three times.

| A. Model Building Set = Group 1 and 2 (N = 44), Validation Set = Group 3 (N = 22) | | | | |
|---|---|---|---|---|
| | β | SE | t | p |
| Constant | 89.60 | 6.29 | 14.24 | 0.00 |
| Gender | -11.37 | 2.12 | -5.38 | 0.00 |
| Age | -0.49 | 0.09 | -5.30 | 0.00 |
| Weight | -0.19 | 0.07 | -2.96 | 0.01 |
| HRR 30s | -0.08 | 0.06 | -1.25 | 0.22 |
| | r | Adj. R-square | Predicted $VO_{2max}$ | SEE |
| | 0.87 | 0.73 | 37.10 (8.10) | 4.80 |

| B. Model Building Set = Group 1 and 2 (N = 44), Validation Set = Group 3 (N = 22) | | | | |
|---|---|---|---|---|
| | β | SE | t | p |
| Constant | 85.29 | 6.70 | 12.72 | 0.00 |
| Gender | -11.18 | 1.88 | -5.95 | 0.00 |
| Age | -0.42 | 0.07 | -6.18 | 0.00 |
| Weight | -0.13 | 0.06 | -2.13 | 0.04 |
| HRR 30s | -0.09 | 0.05 | -1.88 | 0.07 |
| | r | Adj. R-square | Predicted $VO_{2max}$ | SEE |
| | 0.89 | 0.773 | 37.68 (7.79) | 4.21 |

| C. Model Building Set = Group 2 and 3 (N = 44), Validation Set = Group 1 (N = 22) | | | | |
|---|---|---|---|---|
| | β | SE | t | p |
| Constant | 82.13 | 7.34 | 11.19 | 0.00 |
| Gender | -9.93 | 2.68 | -3.71 | 0.00 |
| Age | -0.43 | 0.08 | -5.51 | 0.00 |
| Weight | -0.07 | 0.08 | -0.94 | 0.35 |
| HRR 30s | -0.13 | 0.07 | -1.97 | 0.06 |
| | r | Adj. R-square | Predicted $VO_{2max}$ | SEE |
| | 0.85 | 0.702 | 37.22 (7.84) | 5.01 |

All participants were randomly divided into three groups (1, 2, or 3). Then data from two of three groups were used to develop prediction equation for $VO_{2max}$ value. This equation was used to validate predicted $VO_{2max}$ value with measured $VO_{2max}$. Data were analyzed with linear regression. HRR 30s, heart rate recovery at 30 s after cessation.

**Table S3**. Correlations between the measured $VO_{2max}$ and model-predicted $VO_{2max}$ in the 3-min step test using a 30-cm step height. The prediction equation model was developed using randomly selected two-third of the participants, and their value was compared with that of the non-selected one-third of the participants. The same methods were repeated three times.

| A. Model Building Set = Group 1 and 2 (N = 49), Validation Set = Group 3 (N = 24) | | | | |
|---|---|---|---|---|
| | β | SE | t | p |
| Constant | 86.74 | 7.27 | 11.94 | 0.00 |
| Gender | -10.71 | 2.37 | -4.52 | 0.00 |
| Age | -0.44 | 0.10 | -4.50 | 0.00 |
| Weight | -0.17 | 0.07 | -2.29 | 0.03 |
| HRR 30s | -0.07 | 0.05 | -1.44 | 0.16 |
| | r | Adj. R-square | Predicted $VO_{2max}$ | SEE |
| | 0.83 | 0.66 | 37.89 (7.54) | 5.35 |

| B. Model Building Set = Group 1 and 2 (N = 48), Validation Set = Group 3 (N = 25) | | | | |
|---|---|---|---|---|
| | β | SE | t | p |
| Constant | 80.24 | 6.94 | 11.55 | 0.00 |
| Gender | -8.63 | 2.02 | -4.28 | 0.00 |
| Age | -0.42 | 0.09 | -4.69 | 0.00 |
| Weight | -0.10 | 0.07 | -1.50 | 0.14 |
| HRR 30s | -0.09 | 0.05 | -2.02 | 0.05 |
| | r | Adj. R-square | Predicted $VO_{2max}$ | SEE |
| | 0.85 | 0.69 | 37.30 (6.91) | 4.57 |

| C. Model Building Set = Group 2 and 3 (N = 49), Validation Set = Group 1 (N = 24) | | | | |
|---|---|---|---|---|
| | β | SE | t | p |
| Constant | 85.38 | 5.28 | 16.18 | 0.00 |
| Gender | -11.48 | 1.78 | -6.45 | 0.00 |
| Age | -0.37 | 0.06 | -5.80 | 0.00 |
| Weight | -0.12 | 0.05 | -2.45 | 0.02 |
| HRR 30s | -0.10 | 0.04 | -2.66 | 0.01 |
| | r | Adj. R-square | Predicted $VO_{2max}$ | SEE |
| | 0.91 | 0.80 | 37.34 (8.31) | 4.04 |

All participants were randomly divided into three groups (1, 2, or 3). Then data from two of three groups were used to develop prediction equation for $VO_{2max}$ value. This equation was used to validate predicted $VO_{2max}$ value with measured $VO_{2max}$. Data were analyzed with linear regression. HRR 30s, heart rate recovery at 30 s after cessation.

**Table S4**. Correlations between the measured $VO_{2max}$ and model-predicted $VO_{2max}$ in the 6-minute walk test. The prediction equation model was developed using randomly selected two-third of the participants, and their value was compared with that of the non-selected one-third of the participants. The same methods were repeated three times.

| A. Model Building Set = Group 1 and 2 (N = 43), Validation Set = Group 3 (N = 21) | | | | |
|---|---|---|---|---|
| | β | SE | t | p |
| Constant | 58.54 | 10.18 | 5.75 | 0.00 |
| Gender | -12.42 | 1.74 | -7.16 | 0.00 |
| Age | -0.32 | 0.07 | -4.46 | 0.00 |
| Weight | -0.18 | 0.05 | -3.48 | 0.00 |
| SMWD/10 | 0.27 | 0.09 | 2.92 | 0.01 |
| | r | Adj. R-square | Predicted $VO_{2max}$ | SEE |
| | 0.91 | 0.82 | 36.97 (8.45) | 3.95 |

| B. Model Building Set = Group 1 and 2 (N = 43), Validation Set = Group 3 (N = 21) | | | | |
|---|---|---|---|---|
| | β | SE | t | p |
| Constant | 60.61 | 12.07 | 5.02 | 0.00 |
| Gender | -10.53 | 2.05 | -5.14 | 0.00 |
| Age | -0.37 | 0.10 | -3.86 | 0.00 |
| Weight | -0.17 | 0.07 | -2.44 | 0.02 |
| SMWD/10 | 0.21 | 0.11 | 1.94 | 0.06 |
| | r | Adj. R-square | Predicted $VO_{2max}$ | SEE |
| | 0.85 | 0.7 | 37.30 (6.91) | 4.94 |

| C. Model Building Set = Group 2 and 3 (N = 42), Validation Set = Group 1 (N = 22) | | | | |
|---|---|---|---|---|
| | β | SE | t | p |
| Constant | 64.12 | 12.60 | 5.09 | 0.00 |
| Gender | -10.49 | 2.19 | -4.80 | 0.00 |
| Age | -0.43 | 0.10 | -4.15 | 0.00 |
| Weight | -0.17 | 0.07 | -2.51 | 0.02 |
| SMWD/10 | 0.18 | 0.10 | 1.82 | 0.08 |
| | r | Adj. R-square | Predicted $VO_{2max}$ | SEE |
| | 0.855 | 0.7 | 36.23 (7.77) | 4.99 |

All participants were randomly divided into three groups (1, 2, or 3). Then data from two of three groups were used to develop prediction equation for $VO_{2max}$ value. This equation was used to validate predicted $VO_{2max}$ value with measured $VO_{2max}$. Data were analyzed with linear regression. SMWD, six-minute walked distance.

**Figure S1**. Correlations between the measured $VO_{2max}$ and model-predicted $\dot{V}O_{2max}$ in the 3-min step test using a 20-cm step height. The prediction equation model was developed using randomly selected two-third of the participants, and their value was compared with that of the non-selected one-third of the participants. The same methods were repeated three times.

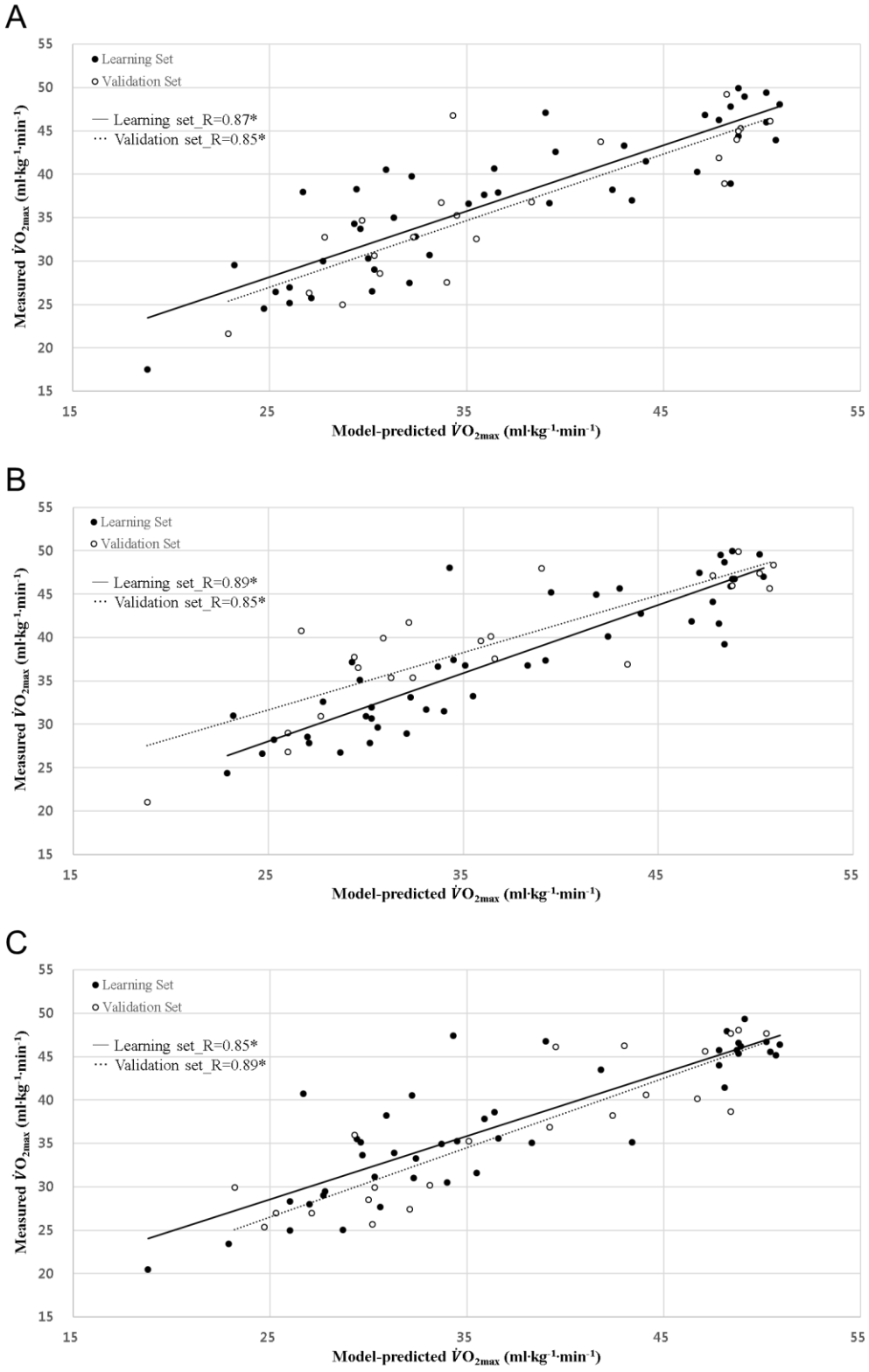

**Figure S2**. Correlations between the measured $VO_{2max}$ and model-predicted $\dot{V}O_{2max}$ in the 3-min step test using a 30-cm step height. The prediction equation model was developed using randomly selected two-third of the participants, and their value was compared with that of the non-selected one-third of the participants. The same methods were repeated three times.

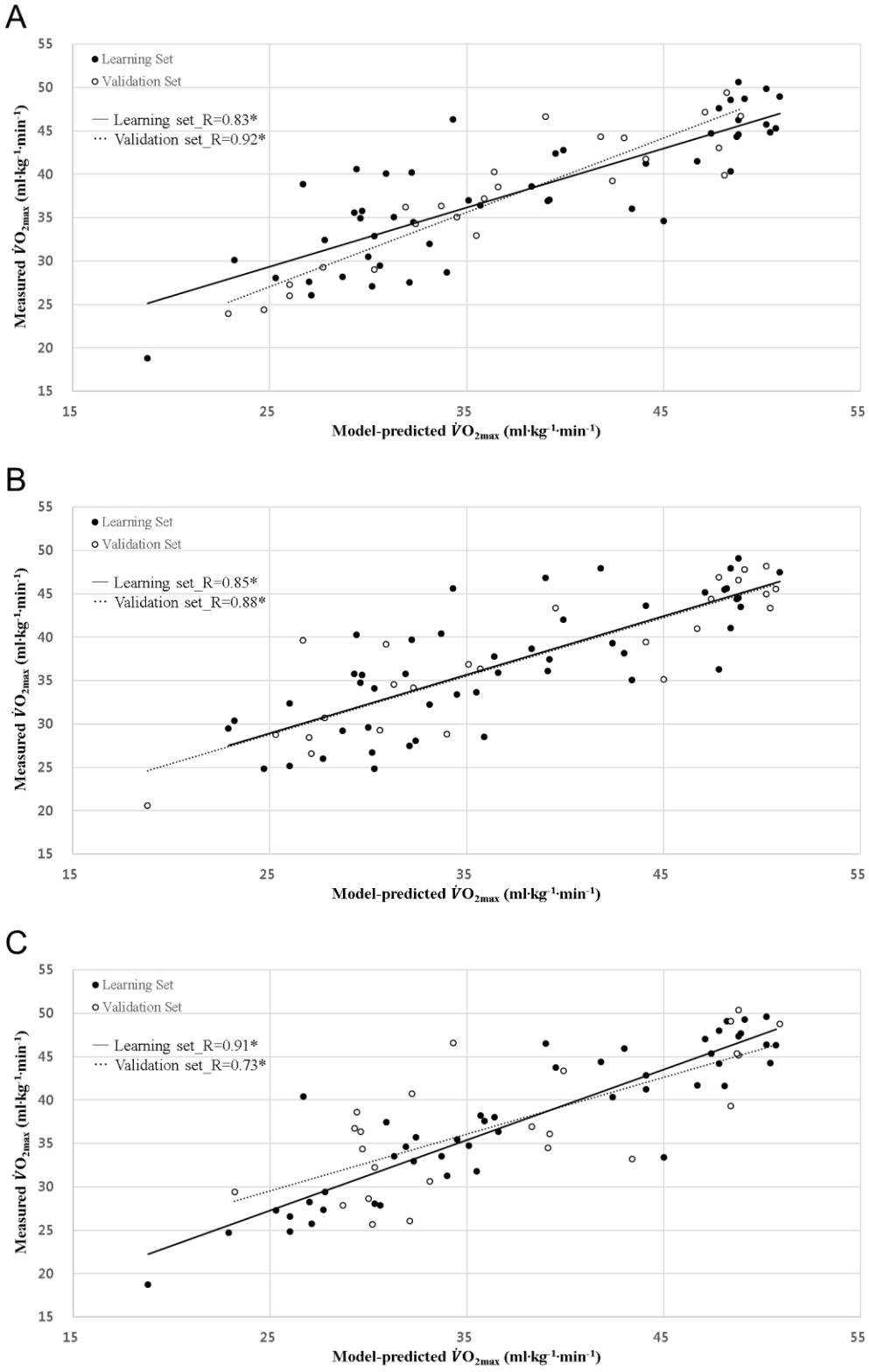

**Figure S3**. Correlations between the measured $VO_{2max}$ and model-predicted $VO_{2max}$ in the 6-minute walk test. The prediction equation model was developed using randomly selected two-third of the participants, and their value was compared with that of the non-selected one-third of the participants. The same methods were repeated three times.