**Supplemental Digital Content 3.** Confusion matrices for the raw wrist acceleration cut-points using a ≥3-MET MVPA definition.

Table 1. Confusion matrix for sedentary and light physical activity intensity activities.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Actual****Intensity** | **Lying****Down** | **TV****viewing** | **Computer****Game** | **Handheld****e-game** | **Writing/****Colouring** | **Standing****activity** | **Getting****ready** | **Slow** **walk** |
|  | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
|  | **ENMO192+** |
| 1. non-MVPA | **100.0** | 0.0 | - | **100.0** | 0.0 | - | **99.9** | 0.1 | - | **100.0** | 0.0 | - | **99.9** | 0.1 | - | **99.1** | 0.9 | - | **97.6** | 2.0 | 0.4 | **75.1** | 24.7 | 0.2 |
| 2. MPA | - | **-** | - | - | **-** | - | - | **-** | - | 100.0 | **0.0** | - | - | - | - | 100.0 | **0.0** | - | 89.5 | **8.6** | 1.9 | 57.7 | **41.8** | 0.5 |
| 3. VPA | - | - | **-** | - | - | **-** | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | **-** |
| 4. MVPA |  | **-** |  | **-** |  | - |  | **0.0** |  | - |  | **0.0** |  | **10.5** |  | **42.5** |
|  | **GENEA250+** |
| 1. non-MVPA | **100.0** | 0.0 | - | **100.0** | 0.0 | - | **100.0** | 0.0 | - | **100.0** | 0.0 | - | **99.4** | 0.6 | - | **98.8** | 1.2 | - | **96.9** | 2.6 | 0.4 | **66.4** | 33.4 | 0.2 |
| 2. MPA | - | **-** | - | - | **-** | - | - | **-** | - | 100.0 | **0.0** | - | - | **-** | - | 100.0 | **0.0** | - | 89.5 | **8.6** | 1.9 | 46.2 | **53.1** | 0.6 |
| 3. VPA | - | - | **-** | - | - | **-** | - | - | **-** | - | - | - | - | - | - | - | - | - | - | - | - | - | - | **-** |
| 4. MVPA |  | **-** |  | **-** |  | **-** |  | **0.0** |  | - |  | **0.0** |  | **12.7** |  | **51.7** |
|  | **BFEN314+** |
| 1. non-MVPA | **99.8** | 0.2 | - | **99.9** | 0.1 | - | **98.7** | 1.3 | - | **99.9** | 0.1 | - | **98.4** | 1.6 | - | **87.9** | 12.1 | - | **33.1** | 66.4 | 0.4 | **59.3** | 40.3 | 0.4 |
| 2. MPA | - | **-** | - | - | **-** | - | - | **-** | - | 100.0 | **0.0** | - | - | - | - | 100.0 | **0.0** | - | 16.1 | **81.6** | 2.2 | 38.7 | **60.1** | 1.3 |
| 3. VPA | - | - | **-** | - | - | **-** | - | - | **-** | - | - | - | - | - | - | - | - | - | - | - | - | - | - | **-** |
| 4. MVPA |  | **-** |  | **-** |  | - |  | **0.0** |  | - |  | **0.0** |  | **83.9** |  | **61.3** |

Note Table 1: Values in boldface indicate the percentage of epochs correctly classified. MPA: moderate physical activity; VPA: vigorous physical activity; MVPA: moderate-to-vigorous physical activity; ENMO: cut-points developed using Euclidian norm minus one; GENEA: cut-points developed using the GENEActiv post processing software; BFEN: cut-points developed using Bandpass Filtered followed by Euclidian Norm.

|  |  |  |  |
| --- | --- | --- | --- |
| **Actual Intensity** | **Dancing** | **Brisk walk** | **Tidy up** |
|   | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
|   | **ENMO192+** |
| 1. non-MVPA | **38.1** | 55.1 | 6.8 | **38.9** | 61.1 | 0.0 | **89.5** | 10.5 | 0.0 |
| 2. MPA | 17.0 | **61.3** | 21.7 | 20.4 | **79.2** | 0.5 | 82.3 | **17.7** | 0.0 |
| 3. VPA | 0.0 | 50.0 | **50.0** | 0.0 | 100.0 | **0.0** | 64.2 | 35.8 | **0.0** |
| 4. MVPA |   | **89.7** |  | **80.7** |  | **17.9** |
|  | **GENEA250+** |
| 1. non-MVPA | **35.3** | 55.8 | 8.9 | **30.0** | 69.7 | **0.0** | **82.4** | 17.6 | 0.0 |
| 2. MPA | 9.2 | **59.2** | 31.6 | 20.3 | **78.5** | 1.0 | 77.1 | **22.9** | 0.0 |
| 3. VPA | 0.0 | 50.0 | **50.0** | 0.0 | 100.0 | **0.0** | 33.3 | 66.7 | **0.0** |
| 4. MVPA |   | **90.7** |  | **77.2** |  | **28.7** |
|  | **BFEN314+** |
| 1. non-MVPA | **12.4** | 70.1 | 17.5 | **21.7** | 78.0 | 0.4 | **21.6** | 78.4 | 0.0 |
| 2. MPA | 0.3 | **54.0** | 45.7 | 14.8 | **83.4** | 1.8 | 7.2 | **92.8** | 0.0 |
| 3. VPA | 0.0 | 0.0 | **100.0** | 0.0 | 100.0 | **0.0** | 0.0 | 100.0 | **0.0** |
| 4. MVPA |   | **99.7** |  | **85.2** |  | **92.8** |

Table 2. Confusion matrix for moderate physical activity intensity activities.

Note Table 2: Values in boldface indicate the percentage of epochs correctly classified. MPA: moderate physical activity; VPA: vigorous physical activity; MVPA: moderate-to-vigorous physical activity; ENMO: cut-points developed using Euclidian norm minus one; GENEA: cut-points developed using the GENEActiv post processing software; BFEN: cut-points developed using Bandpass Filtered followed by Euclidian Norm.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Actual Intensity** | **Basketball** | **Running** | **Locomotor course** | **Soccer** |
|   | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
|  | **ENMO192+** |
| 1. non-MVPA | **28.3** | 69.7 | 2.0 | **16.7** | 18.9 | 64.4 | **23.5** | 48.5 | 27.9 | **41.6** | 36.0 | 22.5 |
| 2. MPA | 9.2 | **78.6** | 12.2 | 13.2 | **28.8** | 58.0 | 10.9 | **39.8** | 49.3 | 13.0 | **29.2** | 57.8 |
| 3. VPA | 7.4 | 63.6 | **29.1** | 3.6 | 6.7 | **89.6** | 5.6 | 20.5 | **73.9** | 3.5 | 13.7 | **82.8** |
| 4. MVPA |  | **97.0** |  | **98.4** |  | **98.2** |  | **99.2** |
|  | **GENEA250+** |
| 1. non-MVPA | **32.3** | 65.7 | 2.0 | **16.7** | 18.9 | 64.4 | **23.5** | 35.3 | 41.2 | **43.8** | 31.5 | 24.7 |
| 2. MPA | 7.1 | **72.2** | 20.7 | 1.9 | **24.3** | 73.8 | 3.2 | **27.6** | 69.2 | 1.5 | **26.9** | 71.6 |
| 3. VPA | 0.2 | 55.9 | **43.9** | 1.1 | 3.1 | **95.8** | 1.0 | 10.3 | **88.7** | 0.4 | 12.3 | **87.3** |
| 4. MVPA |   | **96.6** |  | **98.4** |  | **98.0** |  | **99.0** |
|  | **BFEN314+** |
| 1. non-MVPA | **8.1** | 80.8 | 11.1 | **9.8** | 15.9 | 74.2 | **13.2** | 30.9 | 55.9 | **37.1** | 23.6 | 39.3 |
| 2. MPA | 1.2 | **48.9** | 49.9 | 1.6 | **3.6** | 94.8 | 1.7 | **10.0** | 88.3 | 1.2 | **10.2** | 88.6 |
| 3. VPA | 0.0 | 17.6 | **82.4** | 0.9 | 0.7 | **98.4** | 0.5 | 2.6 | **96.9** | 0.0 | 3.9 | **96.1** |
| 4. MVPA |   | **99.3** |   | **98.7** |  | **98.4** |  | **99.5** |

Table 3: Confusion matrix for vigorous physical activity intensity activities.

Note Table 3: Values in boldface indicate the percentage of epochs correctly classified. MPA: moderate physical activity; VPA: vigorous physical activity; MVPA: moderate-to-vigorous physical activity; ENMO: cut-points developed using Euclidian norm minus one; GENEA: cut-points developed using the GENEActiv post processing software; BFEN: cut-points developed using Bandpass Filtered followed by Euclidian Norm.