**Table S1. Incidence of auto-triggering and delayed cycling for each subject**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Subject | RR (*min-1*) | Cycles (*n*) | Auto-triggering (*n, %)* | Delayed cycling (*n, %)* |
| 1 | 10 | 108 | 20 (19%) | 18 (17%) |
| 2 | 12 | 111 | 20 (18%) | 17 (15%) |
| 3 | 10 | 93 | 22 (24%) | 15 (16%) |
| 4 | 16 | 137 | 24 (18%) | 15 (11%) |
| 5 | 19 | 177 | 37 (21%) | 15 (8%) |
| 6 | 15 | 145 | 30 (21%) | 17 (12%) |
| 7 | 11 | 93 | 19 (20%) | 9 (10%) |
| 8 | 18 | 156 | 30 (19%) | 22 (14%) |
| 9 | 17 | 154 | 16 (10%) | 14 (9%) |
| 10 | 16 | 146 | 15 (10%) | 8 (5%) |
| 11 | 15 | 129 | 16 (12%) | 14 (11%) |
| 12 | 10 | 96 | 11 (11%) | 12 (13%) |
| 13 | 15 | 146 | 16 (11%) | 15 (10%) |
| 14 | 9 | 89 | 13 (15%) | 11 (12%) |
| 15 | 17 | 145 | 23 (16%) | 23 (16%) |

*RR, Respiratory Rate.*

**Table S2. Confusion Matrix for Auto-Triggering detection**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **Reference**  |  |
|  |  | Positive | Negative |  |
| **Working standard Method (EMG)** | Positive | **154***True Positive* | **15***False Positive* | n= 995 cycles |
| Negative | **12***False Negative* | **814***True Negative* |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USdi Method (Excursion)** | Positive | **152**True Positive | **15***False Positive* | n= 962 cycles |
| Negative | **9***False Negative* | **786***True Negative* |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USdi Method****(Thickening)** | Positive | **138***True Positive* | **14***False Positive* | n=963 cycles |
| Negative | **13***False Negative* | **798***True Negative* |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Control Method****(Flow /Pressure)** | Positive | **247***True Positive* | **32***False Positive* | n= 1,925 cycles |
| Negative | **65***False Negative* | **1581***True Negative* |

**Table S3. Confusion Matrix for Delayed Cycling detection**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **Reference**  |  |
|  |  | Positive | Negative |  |
| **Working standard Method (EMG)** | Positive | **103***True Positive* | **9***False Positive* | n= 995 cycles |
| Negative | **20***False Negative* | **863***True Negative* |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USdi Method (Excursion)** | Positive | **95**True Positive | **11***False Positive* | n= 962 cycles |
| Negative | **15***False Negative* | **841***True Negative* |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USdi Method****(Thickening)** | Positive | **102***True Positive* | **8***False Positive* | n=963 cycles |
| Negative | **13***False Negative* | **840***True Negative* |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Control Method****(Flow /Pressure)** | Positive | **151***True Positive* | **60***False Positive* | n= 1,925 cycles |
| Negative | **74***False Negative* | **1640***True Negative* |