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| **Table 1** Participant characteristics, physical activity and sedentary behaviour between PRE-M and POST-M women and Late-PRE-M and Early-POST-M women.  |
| **Characteristic** | **PRE-M** | **POST-M** | **p-value** | **Late-PRE-M** | **Early-POST-M** | **p-value** |
| N | 50 | 50 | - | 10 | 10 | - |
| Time from menopause (y) | - | 6.5±4.3 | - | - | 2.6 1.3 | - |
| Age (y) | 33.2±9.1 | 58.5±5.5 | **<0.001** | 45.9±3.1 | 50.4±2.8c | **0.003** |
| Body mass (kg) | 68.6±1.9 | 65.4±1.9 | 0.25 | 68.1±6.3 | 65.8±8.1 | 0.48 |
| BMI (kg/m2) | 25±6 | 25±4 | 0.87 | 25±3 | 26±3 | 0.63 |
| Body fat (%) | 31.2±8.6 | 34.1±8.0 | 0.09 | 33.6±5.9 | 35.2±5.0 | 0.49 |
| V̇O2max (ml·kg·min) | 34.8±8.6 | 24.8±6.2b  | **<0.001** | 31.6±6.0 | 28.2±7.6 | 0.29 |
| SBP (mmHg)a | 109±8 | 126±15b | **<0.001** | 114±10 | 115±13 | 0.85 |
| DBP (mmHg)a | 65±7 | 72±7c | **0.002** | 69±8 | 70±8 | 0.75 |
| **Physical Activity and Sedentary Behaviour**  |  |  |  |  |  |  |
| Light PA (mins) | 285±74 | 299±88 | 0.40 | 354±80 | 264±104 | **0.05** |
| % Wear Time | 34±7 | 35±9 | 0.88 | 41±8 | 35±10 | 0.41 |
| Moderate PA (min/d) | 55±22 | 49±24 | 0.24 | 43±18 | 55±23 | 0.25 |
| % Wear Time | 7±3 | 6±3 | 0.94 | 5±2 | 8±4 | 0.38 |
| Vigorous PA (min/d) | 10±9 | 5±7c | **0.01** | 9±8 | 9±8 | 0.92 |
| % Wear Time | 1±1 | 1±1 | 0.98 | 1±1 | 1±1 | 0.98 |
| Average daily PA (min/d) | 350±78 | 353±94 | 0.81 | 406±85 | 328±118 | 0.12 |
| Average daily wear time (min/d) | 832±140 | 846±135 | 0.64 | 858±101 | 743±118c | **0.04** |
| Average daily sedentary time (min/d) | 524±80 | 490±100 | 0.09 | 519±55 | 445±108 | 0.11 |

Values are mean ± SD. Abbreviations: PRE-M; pre-menopause, POST-M, post-menopause, Late-PRE-M; late pre-menopause, Early-POST-M; early post-menopause, BMI; body mass index, V̇O2max; maximal oxygen consumption, SBP; systolic blood pressure, DBP; diastolic blood pressure, PA; physical activity. aV̇O2max treated as covariate, significance is denoted by bp<0.001 and cp<0.05.

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| **Table 2** Cerebral hemodynamic differences between PRE-M and POST-M women and Late-PRE-M and Early-POST-M women. |
|  | **PRE-M** | **POST-M** | **p-value** | **Late-PRE-M** | **Early-POST-M** | **p-value** |
| PETCO2 (mmHg) | 36.2±3.2 | 36.2±3.6 | 0.99 | 36.3±3.3 | 41.9 ± 13.6 | 0.23 |
| MCAv (cm/s-1)a | 72.0±14.9 | 61.3±15.4c | **0.03** | 68.9±6.0 | 68.2±16.3 | 0.91 |
| CVC (cm·s-1·mmHg-1)a | 0.79±0.33 | 0.53±0.32c | **0.02** | 0.82±0.12 | 0.56±0.41 | **0.07** |
| MAP (mmHg)a | 80±7 | 90±9b | **<0.001** | 83±9 | 88±8 | 0.62 |
| **Hypercapnic CVR test** |  |  |  |  |
| PETCO2 (mmHg) | 44.9±2.1 | 44.5±3.5 | 0.97 | 45.1±2.1 | 45.0±3.0 | 0.99 |
| Carotid Diameter (mm) | 6.46±0.01 | 6.64±0.01 | 0.18 | 6.37±0.17 | 6.28±0.17 | 0.72 |
| Carotid Diameter (mm)(last 30 seconds) | 6.49±0.06 | 6.37±0.15 | 0.64 | 6.45±0.24 | 6.86±0.25 | 0.25 |
| CVR (r2) | 0.82±0.08 | 0.81±0.09 | 0.55 | 0.83±0.07 | 0.80 ± 0.11 | 0.53 |
| Absolute CVR (cm·s·mmHg-1) | 3.76±1.48 | 3.51±1.92 | 0.52 | 4.03±1.56 | 4.31 ±2.58 | 0.79 |
| Relative CVR (cm·s·mmHg-1) | 4.84±1.99 | 5.47±2.17 | 0.18 | 5.43±2.51 | 5.45 ± 2.36 | 0.99 |
| **Autoregulation**  |  |  |  |  |
| PETCO2 (mmHg) | 38.2±2.5 | 38.0±2.1 | 0.98 | 37.1 1.1 | 37.4 2.0 | 0.97 |
| MAP (mmHg) | 80±9 | 89±7 | 0.10 | 84±3 | 88±5 | 0.58 |
| Normalised gain (%) | 1.35±0.37 | 1.30±0.40 | 0.56 | 1.35±0.29 | 1.31±0.28 | 0.77 |
| Gain (cm·s·mmHg)a | 0.98±0.22 | 0.72±0.22b | **<0.001** | 0.92±0.17 | 0.83±0.19 | 0.35 |
| Phase (degrees) | 22.61±14.77 | 23.79±13.22 | 0.73 | 24.92±12.65 | 14.74±11.87 | 0.18 |
| Coherence | 0.62±0.12 | 0.67±0.12 | - | 0.67±0.12 | 0.62±0.08 | - |
| Values are mean ± SD. Abbreviations: PRE-M; pre-menopause; POST-M; post-menopause; Late-PRE-M; late pre-menopause, Early-POST-M; early post-menopause, PETCO2; end tidal carbon dioxide MCAv; middle cerebral artery velocity, CVC; cerebrovascular conductance, MAP; mean arterial pressure, CVR; cerebrovascular reactivity.  aV̇O2max treated as covariate, significance is denoted by bp<0.001 and cp<0.05. |

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| **Table 3** Vascular data between PRE-M and POST-M women and Late-PRE-M and Early-POST-M women. |
|  |  | **PRE-M****(N=48)** | **POST-M****(N=41)** | **p-value** | **Late-PRE-M****(N=10)** | **Early-POST-M****(N=10)** | **p-value** |
|  | Pulse-Wave Velocity (m/s)a | 5.45±0.99 | 6.87±1.40 | **0.49** | 5.87 ± 0.73 | 5.79 ± 1.05 | 0.84 |
| **FMD** | **Brachial Artery** |  |  |  |  |  |  |
|  | Baseline artery diameter (cm) | 0.34±0.04 | 0.34±0.04 | 0.62 | 0.35±0.04 | 0.34±0.06 | 0.73 |
|  | Peak artery diameter (cm) | 0.36±0.05 | 0.35±0.05 | 0.75 | 0.37±0.04 | 0.36±0.07 | 0.53 |
|  | Time to Peak (secs) | 46±23 | 65±32b | **0.002** | 37±17 | 66±27b | **0.01** |
|  | SRAUC (x103) | 16.8±7.7 | 20.0±10.9 | 0.10 | 14.1±6.3 | 20.9±9.4 | 0.09 |
|  | FMD (%) | 6.4±3.9 | 4.1±3.4b | **0.004** | 5.3±2.6 | 4.7±1.2 | 0.58 |
|  | Adjusted FMD (%) | 6.4±0.5 | 4.2±0.6b | **0.007** | 6.1±1.3 | 4.0±0.7 | 0.30 |
| **IMT** (N=64) | IMT (mm)a  | 0.31±0.04 | 0.38±0.08b | **0.004** | 0.30±0.04 | 0.34±0.30 | 0.09 |
|  | IMT/Lumen  | 0.08±0.14 | 0.10±0.02b | **0.001** | 0.08±0.02 | 0.09±0.01 | **0.05** |
| **FMD** | **Femoral Artery** |  |  |  |  |  |  |  |  |  |
|  | Baseline artery diameter (cm) | 0.58±0.08 | 0.60±0.09 | 0.19 | 0.60±0.06 | 0.62±0.05 | 0.80 |
|  | Peak artery diameter (cm) | 0.61±0.08 | 0.62±0.09 | 0.72 | 0.61±0.06 | 0.63±0.05 | 0.86 |
|  | Time to Peak (secs) | 60±33 | 71±36 | 0.15 | 63±48 | 71±39 | 0.69 |
|  | SRAUC (x103) | 20.3±16.1 | 19.3±13.2 | 0.76 | 17.3±8.8 | 17.3±11.2 | 0.99 |
|  | FMD (%) | 5.8±4.1 | 2.8±2.3c | **<0.001** | 4.1±1.9 | 2.1±1.9 | **0.05** |
|  | Adjusted FMD (%) | 6.0±0.4 | 2.5±0.4c | **<0.001** | 5.3±1.1 | 2.2±1.0 | **0.05** |
| **IMT** | IMT (mm)a | 0.39±0.09 | 0.49±0.11b | **0.04** | 0.46±0.08 | 0.49±0.10 | 0.43 |
|  | IMT/Lumen  | 0.07±0.01 | 0.06±0.01b | **0.01** | 0.08±0.02 | 0.08±0.02 | 0.62 |
| **Carotid Artery** | Lumen artery diameter (mm)a | 6.59±0.40 | 6.85±0.53  | **0.46** | 6.61±0.30 | 6.72±0.54 | 0.71 |
|  | IMT (mm)a | 0.54±0.07 | 0.70±0.08c  | **<0.001** | 0.59±0.07 | 0.67±0.09b | **0.03** |
|  | IMT/Lumen  | 0.08±0.01 | 0.10±0.01c | **<0.001** | 0.09±0.01 | 0.10±0.01b | **0.04** |
| **Reactivity** | CAR (%) | 3.0±4.6 | 0.7±4.9b | **0.03** | 0.8±6.0 | 0.8±4.5 | 0.99 |
| Values are mean ± SD. Abbreviations: PRE-M; pre-menopause, POST-M; post-menopause, Late-PRE-M; late pre-menopause, Early-POST-M; early post-menopause, SRAUC; shear rate area under the curve, FMD; flow-mediated dilation, IMT; intima media thickness, IMT/lumen; IMT-to-lumen ratio, CAR; carotid artery reactivity.  aV̇O2max treated as covariate, significance is denoted by bp<0.001 and cp<0.05.  |