**Table 1.** Baseline characteristics of the study participants (N = 57).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Characteristic | Group AN = 16 | Group BN = 18 | Control groupN = 13 | *p value* |
| Age (year) | 36.87 ± 6.31 | 36.55 ± 3.74 | 37.34 ± 4.82 | 0.903 |
| Height (cm) | 167.93 ±4.58 | 164.66 ± 4.01 | 166.76 ± 4.91 | 0.118 |
| Weight (kg) | 65.62 ± 5.24 | 66.48 ± 5.34 | 66.66 ± 6.32 | 0.861 |
| EDSS | 2 ≤ EDSS ≤ 4 | 4.5 ≤ EDSS ≤ 6.5 | 2 ≤ EDSS ≤ 6.5 | --- |

**Table 2.** The results of the 9HPT in MS patients (repeated measures mixed ANOVA).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Tests | Effect | Value | F | Hypothesis df | Error df | Sig. | Partial η2 |
| 9HPT | Time | 0.21 | 52.48 | 3.000 | 42.000 | 0.001 | 0.78 |
| Time\*Group | 0.370 | 9.01 | 6.000 | 84.000 | 0.001 | 0.392 |

**Table 3.** Pairwise Comparisons in the 9HPT (four-time point)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Group | Time | Time | Sig.b | 95% Confidence Interval for Difference b |
| Upper Bound | Lower Bound |
| Group A | Pre-test | Fourth week | 0.001 | 3.323 | 1.299 |
| Sixth week | 0.001 | 4.268 | 2.149 |
| Post-test | 0.001 | 5.094 | 3.048 |
| Fourth week | Sixth week | 0.001 | 1.375 | 0.420 |
| Post-test | 0.001 | 2.392 | 1.128 |
| Sixth week | Post-test | 0.001 | 1.324 | 0.401 |
| Group B | Pre-test | Fourth week | 0.001 | 3.079 | 1.598 |
| Sixth week | 0.001 | 4.964 | 2.633 |
| Post-test | 0.001 | 6.940 | 4.206 |
| Fourth week | Sixth week | 0.001 | 2.154 | 0.767 |
| Post-test | 0.001 | 4.204 | 2.266 |
| Sixth week | Post-test | 0.001 | 2.536 | 1.013 |
| Control Group | Pre-test | Fourth week | 1.000 | 0.645 | -0.760 |
| Sixth week | 1.000 | 1.426 | -0.475 |
| Post-test | 1.000 | 2.604 | -1.389 |
| Fourth week | Sixth week | 1.000 | 1.114 | -0.483 |
| Post-test | 1.000 | 2.329 | -0.999 |
| Sixth week | Post-test | 1.000 | 1.260 | -1.524 |
| Based on estimated marginal means  |
| \*. The mean difference is significant at the 0.05 level |
| b. Adjustment for multiple comparisons: Bonferroni. |

**Table 4.** The results of the T25FW in MS patients (repeated measures mixed ANOVA).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Tests | Effect | Value | F | Hypothesis df | Error df | Sig. | Partial η2 |
| T25FW | Time | 0.141 | 85.630 | 3.000 | 42.000 | 0.000 | 0.859 |
| Time\*Group | 0.253 | 13.812 | 6.000 | 84.000 | 0.000 | 0.497 |

**Table 5.** Pairwise Comparisons in the T25FW (four-time point)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Group | Time | Time | Sig.b | 95% Confidence Interval for Difference b |
| Upper Bound | Lower Bound |
| Group A | Pre-test | Fourth week | 0.001 | 1.102 | 0.523 |
| Sixth week | 0.001 | 1.565 | 0.978 |
| Post-test | 0.001 | 2.093 | 1.189 |
| Fourth week | Sixth week | 0.001 | 0.682 | 0.235 |
| Post-test | 0.001 | 1.185 | 0.473 |
| Sixth week | Post-test | 0.003 | 0.621 | 0.119 |
| Group B | Pre-test | Fourth week | 0.001 | 1.502 | 0.621 |
| Sixth week | 0.001 | 2.146 | 1.234 |
| Post-test | 0.001 | 2.709 | 1.796 |
| Fourth week | Sixth week | 0.001 | 0.938 | 0.318 |
| Post-test | 0.001 | 1.503 | 0.880 |
| Sixth week | Post-test | 0.001 | 0.798 | 0.337 |
| Control Group | Pre-test | Fourth week | 1.000 | 1.073 | -0.442 |
| Sixth week | 1.000 | 0.289 | -0.240 |
| Post-test | 1.000 | 1.213 | -0.335 |
| Fourth week | Sixth week | 1.000 | 0.442 | -1.025 |
| Post-test | 1.000 | 0.512 | -1.051 |
| Post-test | 1.000 | 1.025 | -0.289 |
| Based on estimated marginal means  |
| \*. The mean difference is significant at the 0.05 level |
| b. Adjustment for multiple comparisons: Bonferroni. |

**Table 6.** Quality of life measurements by Short Form-36 health survey

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | **Group** | **Pre-test** | **Post-test** | ***P Value*** |
| PF | Group A | 80.9374 ± 14/049 | 88.750 ± 12.041 | 0.000 |
| Group B | 60.8383 ± 22/245 | 71.944 ± 14.066 |
| Control group | 66.153 ± 19.034 | 64.6154 ± 9.674 |
| RP | Group A | 50.00 ± 22.360 | 84.375 ± 17.969 | 0.031 |
| Group B | 56.944 ± 23.957 | 88.888 ± 17.619 |
| Control group | 53.846 ± 32.025 | 46.153 ± 32.025 |
| EF | Group A | 50.937 ± 19.851 | 81.875 ± 14.244 | 0.017 |
| Group B | 54.166±21.161 | 81.388±12.343 |
| Control group | 51.538 ± 24.185 | 46.923 ± 23.939 |
| BP | Group A | 70 ± 25.314 | 83.75 ± 20.351 | 0.007 |
| Group B | 56.52 ± 23.391 | 73.75 ± 18.515 |
| Control group | 50.923±22.366 | 49.192±22.054 |
| RE | Group A | 41.664 ± 37.514 | 70.829 ± 23.961 | 0.814 |
| Group B | 29.626 ± 25.277 | 70.736 ± 26.780 |
| Control group | 58.970 ± 30.893 | 46.150 ± 34.796 |
| EW | Group A | 50.625±16.820 | 76.875±13.275 | 0.001 |
| Group B | 54.444 ± 15.707 | 77.5 ± 11.014 |
| Control group | 46.923 ± 15.074 | 45.769 ± 15.922 |
| SF | Group A | 62.5 ± 23.717 | 84.375 ± 17.969 | 0.001 |
| Group B | 52.083 ± 21.966 | 72.222±19.438 |
| Control group | 43.269±20.165 | 42.269 ± 20.074 |
| GH | Group A | 67.5 ± 17.981 | 80.625 ± 13.149 | 0.016 |
| Group B | 61.388 ± 13.912 | 83.611 ± 8.711 |
| Control group | 61.923 ± 11.996 | 59.615 ± 13.913 |
| PCS | Group A | 268.437 ± 61.953 | 337.5 ± 51.615 | 0.001 |
| Group B | 233.333 ± 50.903 | 318.333 ± 32.977 |
| Control group | 232.846 ± 59.089 | 219.576 ± 59.527 |
| MCS | Group A | 205.726 ± 65.891 | 313.954 ± 46.849 | 0.005 |
| Group B | 190.321 ± 60.795 | 301.847 ± 48.346 |
| Control group | 200.701 ± 65.809 | 181.112 ± 62.116 |

Values are presented as mean ± SD. Repeated measurement of analysis of variance for Short Form-36 survey. *P* < 0.05.

PF, physical functioning; RP, role-physical; EF, Energy/Fatigue; BP, bodily pain; RE, role emotional; RW, Emotional well-being; SF, social functioning; GH, general health; PCS, physical component summary; MCS, mental component summary.

Allocated to intervention (N = 16)
- Received allocated
intervention (N = 20)
- Did not receive allocated intervention (Absence exceeded and fear of COVID-19)
(N = 4)

Allocated to intervention (N = 18)
- Received allocated
intervention (N = 20)
- Did not receive allocated intervention
(lack of participation
in post-test sessions,
COVID-19 and relapse
of MS symptoms)
(N = 2)

Analysis

Analyzed (N = 16)
- Excluded from
analysis (N = 0)

Assessed for eligibility (N = 102)
**Phase 2**

Excluded (N = 57)

Randomized (N = 47)

Allocation

Allocated to intervention (N = 13)
- Received allocated
intervention (N = 17)
- lack of participation
in post-test sessions
(N = 4)

Analyzed (N = 18)
- Excluded from
analysis (N = 0)

Analyzed (N = 13)
- Excluded from
analysis (N = 0)

Enrollment

**Figure 1.** flow-diagram of the study protocol.