**Supplementary materials**

Supplementary Table S1. Spearman rank correlation between moderate to vigorous physical activity and other variables

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable** | **Baseline *ρ* (*p*-value)** | **Follow-up *ρ* (*p*-value)** | **△3-Year *ρ* (*p*-value)** |
| MVPA | 1 | 1 | 1 |
| EC | .57\*\* (<.001) | .35\*\* (.004) | .52\*\* (<.001) |
| HRQoL | .52\*\* (<.001) | .46\*\* (<.001) | .50\*\* (<.001) |
|  Physical function HRQoL | .61\*\* (<.001) | .45\*\* (<.001) | .43\*\* (<.001) |
|  Emotion function HRQoL | .41\*\* (<.001) | .25\* (.013) | .32\*\* (.001) |
|  Social function HRQoL | .34\*\* (.001) | .44\*\* (<.001) | .33\*\* (.001) |
|  School function HRQoL | .41\*\* (<.001) | .46\*\* (<.001) | .40\*\* (<.001) |
| Age | 0.2 (.078) | -.04 (.674) | -.10 (.347) |
| Sex | -.26\*\* (.010) | -.05 (.619) | .09 (.391) |
| BMI | -.02 (.824) | .11 (.301) | .01 (.906) |
| NYHA (Ⅰ, Ⅱ, Ⅲ) | -.21\* (.036) | -.22\* (.029) | -.06 (.580) |
| Disease type  |  -.39\*\* (<.001) |  -.30\*\* (.002) | -.09 (.388) |
| Number of surgical during the follow-up period  | -.08 (.441) | -.01 (.888) | .07 (.483) |
| Number of procedures during the Follow-up period  | -.21\* (.035) | -.10 (.331) | .03 (.769) |
| Number of hospitalization during the Follow-up period | -.28\*\* (.005) | -.15 (.130) | .07 (.516) |
| Number of medication | -.27\*\* (.006) | -.20\* (.049) | -.09 (.374) |
| Left ventricle ejection fraction | .08 (.408) | .17 (.090) | .01 (.951) |

\*p<.05, \*\*p<.01, MVPA: moderate to vigorous physical activity, EC; exercise capacity, HRQoL; health-related quality of life, BMI; body mass index, Disease type; simple, moderate, complex, NYHA; New York Heart Association functional classification, △; change in value (follow-up – baseline)

Supplementary Table S2. Multiple regression analysis of variables related to changes in exercise capacity and moderate to vigorous physical activity (n=58)

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| --- | --- | --- | --- | --- | --- |
|  | **Unstandardized Coefficients** | **Standardized Coefficients** | ***t*** | ***p*** | **VIF** |
| **B** | **SE** | ***β*** |
| (Constant) | 48.852 | 12.605 |  | 3.876 | <.001 |  |
| △ MVPA | .001 | .000 | .250 | 2.112 | .040 | 1.321 |
| Baseline MVPA | .002 | .001 | .233 | 1.637 | .109 | 1.906 |
| Baseline EC | -.618 | .128 | -.744 | -4.842 | <.001 | 2.225 |
| Age | -.352 | .356 | -.112 | -.989 | .328 | 1.201 |
| Sex | -2.400 | 1.637 | -.181 | -1.466 | .150 | 1.431 |
| BMI | -.254 | .203 | -.148 | -1.247 | .219 | 1.327 |
| NYHA (Ⅰ, Ⅱ, Ⅲ) | -1.649 | 1.534 | -.135 | -1.075 | .288 | 1.479 |
| Disease type  | -1.296 | 1.557 | -.111 | -.833 | .410 | 1.686 |
| Number of surgical during the follow-up period  | -1.742 | 2.499 | -.101 | -.697 | .489 | 1.959 |
| Number of procedures during the Follow-up period  | 0.664 | 2.143 | 0.054 | 0.310 | .758 | 2.841 |
| Number of hospitalization during the Follow-up period | -0.278 | 1.742 | -0.030 | -0.160 | .874 | 3.324 |
| Number of medication | -0.533 | 0.537 | -0.131 | -0.992 | .327 | 1.634 |
| Left ventricle ejection fraction | -0.145 | 0.089 | -0.202 | -1.627 | .111 | 1.448 |
| R=.730, R2=.553, Adjusted R2=.394, F=3.856, *p*<.001, Durbin-Watson=1.359 |

VIF; variation inflation factor, SE; Standard error, △; change value (follow-up value – baseline value), MVPA: moderate to vigorous physical activity, EC; exercise capacity, BMI; body mass index, NYHA; New York Heart Association functional classification, Disease type; simple, moderate, complex, △; change value (follow-up value – baseline value)

Supplementary Table S3. Multiple regression analysis of variables related to changes in HRQoL and moderate to vigorous physical activity.

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| --- | --- | --- | --- | --- | --- |
|  | **Unstandardized Coefficients** | **Standardized Coefficients** | ***t*** | ***p*** | **VIF** |
| **B** | **SE** | ***β*** |
| (Constant) | 48.094 | 13.404 | 　 | 3.588 | .001 | 　 |
| △ MVPA | .002 | .001 | .380 | 4.688 | <.001 | 1.177 |
| Baseline MVPA | .002 | .001 | .153 | 1.514 | .134 | 1.821 |
| Baseline HRQoL | -382 | .077 | -.478 | -4.968 | <.001 | 1.662 |
| Age | -.233 | .500 | -.037 | -.466 | .643 | 1.132 |
| Sex | -.070 | 2.083 | -.003 | -.034 | .973 | 1.291 |
| BMI | .431 | .261 | .135 | 1.651 | .102 | 1.205 |
| NYHA  | -.586 | 2.023 | -.029 | -.290 | .773 | 1.789 |
| Disease type  | -.076 | 1.541 | -.005 | -.049 | .961 | 1.512 |
| Number of surgical during the follow-up period  | -2.742 | 2.953 | -.073 | -.928 | .356 | 1.118 |
| Number of procedures during the Follow-up period  | 2.037 | 1.858 | .096 | 1.096 | .276 | 1.376 |
| Number of hospitalization during the Follow-up period | -1.353 | .580 | -.219 | -2.330 | .022 | 1.591 |
| Number of medication | -1.698 | .767 | -.242 | -2.212 | .030 | 2.140 |
| Left ventricle ejection fraction | -.331 | .114 | -.249 | -2.913 | .005 | 1.313 |
| R=.725, R2=.526, Adjusted R2=.454, *F*=7.259, *p*<.001, Durbin-Watson=1.796 |

VIF; variation inflation factor, SE; Standard error, △; change value (follow-up value – baseline value), MVPA: moderate to vigorous physical activity, HRQoL; health-related quality of life, BMI; body mass index, NYHA; New York Heart Association functional classification, Disease type; simple, moderate, complex