Physical Activity Level and Self-Esteem in Middle-Aged Women

Magdalena Dąbrowska-Galas¹,* and Jolanta Dąbrowska²

Abstract: Background: Physical activity (PA) is a behavioral modality that may help decrease negative symptoms of menopause and enhance some positive aspects of mental health, including self-esteem. Reduced self-esteem may put menopausal women at higher risk of negative outcomes of menopause and result in a more unpleasant and stressful menopausal experience. The objective of this study was to examine the role of physical activity level on self-esteem in middle-aged women. Methods: Women aged 45–60 from Poland took part in this study. The Rosenberg Self-Esteem Scale, the International Physical Activity Questionnaire, the Menopause Rating Scale and Beck Depression Inventory were used in this study. Results: Among the 111 women, the mean age was 51.7 ± 4.7. The most severe symptoms among studied women concerned sexual problems (1.71 ± 1.5), irritability (1.58 ± 1.37) and joint and muscular discomfort (1.56 ± 1.55). Women with higher total PA level had better self-esteem (p = 0.001). Conclusions: The results of this study showed that physical activity levels can be associated with self-esteem. Most middle-aged women reported high physical activity levels. These results have clinical implications for the inclusion of PA in the lives of middle-aged women to improve self-esteem and mental health.

Keywords: self-esteem; IPAQ; MRS; BDI; menopause

1. Introduction

An aspect of a woman’s health in the middle-age period has attracted the attention of many researchers. Women spend half of their life in the middle age and afterwards, and during this time they experience physical and mental changes, as well as undergoing social role changes [1].

Menopausal transition has been related to a number of health impairments and variability of symptoms women experience as a result of hormone changes [2]. These, in turn, can affect self-esteem and life satisfaction [3]. The media create an ideal image of women, and all exceptions related to the inconveniences associated with menopausal symptoms and mental or physical disorders are sometimes stigmatized [4]. The results of Hunter and Rental (2007) showed that women with a higher severity of vasomotor symptoms and experiencing stress, report lower self-esteem [5]. Bloch (2002) showed that the severity of psychological symptoms decreased the self-esteem of menopausal women [6]. Włodarczyk et al. (2017) showed that women with high intensity of psychological, vasomotor and somatic menopausal symptoms had lower self-esteem [7]. Lower self-esteem is identified as one of the most common negative symptoms during this time [8,9].

Self-esteem is an essential component of well-being, an important factor of emotional and social adjustment, and is defined as an individual belief that one is a “good enough” and valuable person [10,11]. People with lower levels of self-esteem appear to be more susceptible to negative effects such as anxiety, lack of satisfaction, lower body esteem and depression [12,13]. Reduced self-esteem may put menopausal women at higher risk for
negative outcomes of menopause and result in a more unpleasant and stressful menopausal experience [14]. Nosek et al. (2010) showed that high self-esteem helps with coping with the transition through the menopause [15].

Physical activity (PA) is one behavioral modality that may help decrease negative symptoms of menopause and enhance some positive aspects of mental health, including self-esteem [16–18]. Recent studies of PA and self-esteem have suggested that physical self-esteem was a part of global self-esteem and was related to body attractiveness, physical condition and strength; moreover, some studies have suggested that physical appearance or body esteem may even be synonymous with global self-esteem [19].

Additionally, menopausal women often have a negative body image, which in turn correlates with low self-esteem [20]. The menopausal transition is also related to weight gain and increases in central adiposity [13,21]. Previous studies suggest that among middle-aged women there is a relationship between BMI and satisfaction with body esteem, thus, body changes during menopause may place women at increased risk for diminished self-esteem [22,23]. Most studies focused on the relationship between weight changes and self-esteem, and showed that higher self-esteem was associated with weight loss or lower BMI [24,25]. Earlier research demonstrated a relationship between body image and global self-esteem, reporting that PA reduces BMI, improves body attractiveness and, consequently, self-esteem [23].

A few studies have examined the relationship between specific PA activities such as yoga, walking, gardening, jogging or cycling on self-esteem in women [26]. However, surprisingly, no research has been conducted examining the effects of physical activity level on self-esteem in middle-aged women. Therefore, the objective of this study was to examine the effect of physical activity level on self-esteem in middle-aged women.

2. Materials and Methods

2.1. Study Group

This was a cross-sectional study. Women aged 45–60 who visited healthcare center in Silesia in Poland, and agreed to participate in the study, were selected. Participation in the study was voluntary and anonymous. Verbal informed consent was obtained from all participants. The inclusion criteria for the research were: aged 45–60 years, consent to participate in the research, no serious illness. The exclusion criteria were contraindications to physical activity, impaired physical mobility, major depression, incomplete completed questionnaire. In total, 130 women were invited to participate in the study. Nineteen women with missing data in the questionnaire were excluded from the analysis. The study protocol was reviewed and approved by the Bioethical Committee of the Medical University of Silesia in Katowice (PCN/022/KB1/147/1/19/20).

2.2. Questionnaire

The research tool was a survey consisting of five parts (one self-designed survey and four validated, international questionnaires: the Rosenberg Self-Esteem Scale (RSES), the International Physical Activity Questionnaire short form (IPAQ-SF), the Menopause Rating Scale (MRS) and the Beck Depression Inventory-Second Edition (BDI-II). The first part included self-designed questions about sociometric and basic gynecologic data.

2.2.1. The Rosenberg Self-Esteem Scale

This questionnaire was used to evaluate self-esteem. This scale comprises 10 statements, with four choices of answers on the Likert point scale (1 = completely agree; 4 = completely disagree). The scale has two factors. The first one comprises six items related to positive self-esteem, and the second factor, four items that refer to negative self-esteem. Total score ranges from 10 to 40, the higher the score on the scale, the higher the individual level of self-esteem [27].
2.2.2. The International Physical Activity Questionnaire

This tool was used to assess the level of physical activity. IPAQ is a self-report questionnaire evaluating physical activity level. It is intended for adults aged 15–69 years. It consists of questions about the previous 7 days and asks about the frequency and duration of low, moderate and high intensity PA lasting at least 10 min [28]. PA level was expressed as Metabolic Equivalent of Work (MET)-min (where the metabolic equivalent of 1MET is defined as the amount of oxygen consumed when sitting at rest and is 3.5 mL O\textsubscript{2} per kg body weight/min) per week. According to the IPAQ scoring protocol, women were classified into groups with low, moderate or high levels of physical activity, and weekly energy expenditure for each PA level was calculated by multiplying the MET by number of days during the week. In accordance with IPAQ methodology, vigorous PA was assigned to 8 MET, moderate PA to 4 MET and walking to 3 MET [29].

2.2.3. The Menopause Rating Scale

This validated and standardized scale was used to assess the severity of menopausal symptoms. The scale ensures documented credibility, sensitivity, reliability and duplication of results. MRS is a self-administered tool consisting of 11 descriptions of climacteric symptoms. All items are divided into 3 domains: psychological (depressive mood, physical and mental exhaustion, irritability and anxiety), somato-vegetative (hot flushes, heart discomfort, muscle and joint problems and sleeping problems), urogenital (sexual problems, dryness of vagina and bladder problems).

Total score is the sum in each of the domains and ranges from 0 (asymptomatic) to 44 (highest degree of complaints) [30,31].

2.2.4. The Beck Depression Inventory-Second Edition

This inventory was used to evaluate the presence and severity of depressive symptoms [32]. This questionnaire is a 21-item self-reporting screening tool, with each item rated on a 4-point scale from 0 (not present) to 3 (severe). The total score ranges from 0 to 63, with higher values indicating more severe depressive symptoms. The BDI-II score from 0 to 13 was interpreted as no depressive symptoms, 14 to 19 as mild depression, 20–28 as moderate depression and 29–63 as severe depression [32].

2.3. Statistical Analysis

Statistical analysis was performed using the Statistica 10 (Statistica v10, StatSoft, Krakow, Poland). For measurable variables, such values as arithmetic means, median, standard deviations were calculated. For qualitative variables, percentage was calculated. The Shapiro–Wilk test was used to determine normality of data distribution. The analysis of variance (ANOVA) with post hoc Tuckey test was used. The level of \( \alpha = 0.05 \) was assumed as statistically significant.

3. Results

Among 111 women, the mean age was \( 51.7 \pm 4.7 \). The mean BMI value of women was 26.12. The majority of women were living in a city of up to 100,000 citizens (47.75%), did not smoke (75.68%), were higher educated (45.05%), married or cohabitating (80.18%) and had irregular periods (46.85%). According to IPAQ, 41.44% of women had a high PA level, 31.53% of participants had an average PA level, while 27.03% presented a low PA level. The majority of women had no depressive symptoms (82.88%). The results showed that 15.32% of women reported very high self-esteem. Approximately one-third of participants had high (29.73%) or average (24.32%) self-esteem and one-fifth had very low self-esteem (Table 1).
Table 1. Characteristics of all participants.

| Variables                  | Study Group (n = 111) |        |        |        |
|----------------------------|-----------------------|--------|--------|--------|
|                            | Mean | Min | Max | SD     |
| Age (years)                | 51.7 | 45  | 60  | 4.7    |
| Weight (kg)                | 70.37 | 49  | 100  | 11.48  |
| Height (cm)                | 164.05 | 150 | 176  | 5.72   |
| BMI (kg/m²)                | 26.12 | 16.96 | 34.6 | 3.86   |
| Place of residence         |        |     |     |        |
| Village                    | 15  |    |     | 13.51  |
| A city of up to 100,000    | 53  |    |     | 47.75  |
| A city above 100,000       | 43  |    |     | 38.74  |
| Smoking                    |        |     |     |        |
| No                         | 84  |    |     | 75.68  |
| Yes                        | 27  |    |     | 24.32  |
| Education                  |        |     |     |        |
| Primary                    | 20  |    |     | 18.02  |
| Secondary                  | 41  |    |     | 36.94  |
| Higher                     | 50  |    |     | 45.05  |
| Marital status             |        |     |     |        |
| Married / Cohabitating     | 89  |    |     | 80.18  |
| Single                     | 7   |    |     | 6.31   |
| Divorced                   | 11  |    |     | 9.91   |
| Widow                      | 4   |    |     | 3.6    |
| Physical activity level    |        |     |     |        |
| (IPAQ) Low                 | 30  |    |     | 27.03  |
| Moderate                   | 35  |    |     | 31.53  |
| Higher                     | 46  |    |     | 41.44  |
| BDI                        |        |     |     |        |
| No                         | 92  |    |     | 82.88  |
| Mild                       | 11  |    |     | 9.91   |
| Moderate                   | 6   |    |     | 5.41   |
| Severe                     | 2   |    |     | 1.80   |
| SES                        |        |     |     |        |
| Very low                   | 20  |    |     | 18.02  |
| Low                        | 14  |    |     | 12.61  |
| Average                    | 27  |    |     | 24.32  |
| High                       | 33  |    |     | 29.73  |
| Very high                  | 17  |    |     | 15.32  |

BDI—Beck Depression Inventory; SES—Self-esteem Scale; IPAQ—International Physical Activity Questionnaire.

The results of the MRS showed that the most severe symptoms among studied women concerned sexual problems (1.71 ± 1.5), irritability (1.58 ± 1.37) and joint and muscular discomfort (1.56 ± 1.55). Sleep problems and physical and mental exhaustion were evaluated at the similar mean value (1.46 and 1.48, accordingly). The mean value of depressive mood was 1.11 (Table 2). According to MRS domains (urogenital, somato-vegetative and psychological), the highest degree of complaints were observed in the somato-vegetative domain (5.6 ± 3.69), while the lowest degree of complains were reported in the urogenital domain (3.82 ± 3.4). The psychological domain had a mean value of 5.6 ± 3.69 (Table 2).
A significant relationship was observed between self-esteem and the physical activity level in specific PA levels and in total (Table 3). Women with higher total PA level had better self-esteem \( (p = 0.001) \). Significant between-group differences in self-esteem and PA level were observed between very low and high self-esteem, as well as very low and very high self-esteem. According to the moderate and high PA level in relation to self-esteem, the higher the self-esteem the higher mean value of MET-min/week was observed. Specific intergroups relations are presented in Table 3. In terms of walking, women with high self-esteem had a slightly higher walking MET-value than the participants with very high self-esteem; however, no significant relation between these two groups was observed.

Table 2. The characteristics of menopausal symptoms (MRS scale) in the participants.

| Symptoms (MRS Scale) | Mean | ±SD |
|----------------------|------|-----|
| Hot flushed, sweating | 1.30 | 1.28 |
| Heart discomfort      | 1.29 | 1.36 |
| Sleep problems        | 1.46 | 1.56 |
| Depressive mood       | 1.11 | 1.23 |
| Irritability          | 1.58 | 1.37 |
| Anxiety               | 0.87 | 1.17 |
| Physical and mental exhaustion | 1.48 | 1.32 |
| Sexual problems       | 1.71 | 1.50 |
| Bladder problems      | 0.72 | 1.16 |
| Dryness of vagina     | 1.39 | 1.50 |
| Joint and muscular discomfort | 1.56 | 1.55 |
| Urogenital domain     | 3.82 | 3.40 |
| Psychological domain  | 5.04 | 3.86 |
| Somato-vegetative domain | 5.60 | 3.69 |
| Total                 | 14.46 | 8.99 |

MRS—Menopause Rating Scale.

Table 3. Relationship between physical activity level (IPAQ) and self-esteem (SES).

| IPAQ                  | Very Low | Low (SD) | Average (SD) | High (SD) | Very High (SD) | p   |
|-----------------------|----------|----------|--------------|-----------|----------------|-----|
| total MET-min/week    | 758.9*   | 1223.13  | 2134.64      | 2090.48   | 1881.26        | 2304.79       | 4508.03* | 6333.23 | 5632.47 | 4969.70 | 0.001 |
| high PA level MET-min/week | 144.00*  | 378.67   | 214.29†      | 456.77    | 403.00 E       | 1138.91       | 789.09  | 1614.85 | 1927.06† | 2470.76 | 0.002 |
| moderate PA level MET-min/week | 261.00*  | 767.54   | 371.29*      | 368.15    | 464.44 -E      | 593.87        | 1336.97* | 2268.52 | 1717.65† | 2079.54 | 0.009 |
| walking PA level MET-min/week | 353.93*  | 470.59   | 766.07       | 1842.79   | 1016.89 E      | 1447.99       | 2382.00* | 3306.89 | 1987.76 E | 2565.75 | 0.014 |

\* \( p < 0.05 \) very low versus high; † \( p < 0.05 \) very low versus very high; E \( p < 0.05 \) average versus very high; ^ \( p < 0.05 \) low versus very high; †† \( p < 0.05 \) low versus very high; IPAQ—International Physical Activity Questionnaire. SES—Self-esteem Scale, Rosenberg.

4. Discussion

The North American Menopause Society (NAMS) recommends changing lifestyle as the first line of defense against the adverse consequences of menopause [33]. Physical activity has a direct impact on many adverse consequences of menopause and has been shown to improve self-esteem [16–18]. Women with low self-esteem report more severe menopausal symptoms and worse quality of life, while healthy self-esteem is an important component of mental health [14,19].

In the present study, we evaluated the physical activity level and self-esteem in middle-aged women. We were interested in examining whether PA level influenced self-esteem. We classified physical activity level into low, moderate and high, according to IPAQ. The results were surprising because 41.44% of women reported a high PA level. Our results are consistent with the previous study from Poland [18].
However, earlier studies have shown a reduction in daily energy expenditure and a shift toward a more sedentary lifestyle during the menopausal transition [34,35]. A cross-sectional study from Finland showed that the majority of women aged 47–55 reported a moderate PA level (62.32%) [36]. A study from Poland showed similar results [15]. Another large cross-sectional study from Japan showed that 57.84% of perimenopausal women (aged 44–56) had a low PA level [37]. Our study included women in the 45–65 age group, thus the difference in PA level may result from age. It may indicate that postmenopausal women are more physically active.

Different studies have shown a significant decline in body muscle power and handgrip strength in postmenopausal women when compared to premenopausal women [38,39]. However, Bondarev et al. (2018) showed no difference in a 6-min walking test distance in three menopause status groups [36]. This may indicate that menopausal status does not affect the cardiovascular and respiratory system. In another study carried out on middle-aged women, no decline in maximal oxygen consumption during the menopausal transition was observed [40].

To the best of our knowledge, no previous studies have concentrated on the level of PA according to self-esteem in middle-aged women. Our results revealed significant differences between PA level and self-esteem in women. For moderate and high PA levels, higher self-esteem in women was reported together with a higher mean value of MET-min/week. It is interesting that the mean value of MET-min/week in walking was highest when compared with the moderate or high PA level. Even women with very low self-esteem reported 353.93 MET-min/week walking compared to 144 MET-min/week in the high PA level group or 261 MET-min/week in the moderate PA level group. A similar relation was observed in all self-esteem levels. Walking MET-min/week showed the highest value. This may indicate that walking is a highly prevalent and preferred form of PA among middle-aged women.

Elavsky et al. (2007) enrolled middle-aged women in a 4-month randomized trial with yoga exercises and walking. The analysis of the follow-up study showed a small improvement in self-esteem in the walking and yoga groups compared to a control group [25]. These findings suggest that non-aerobic type exercise such as yoga or walking at low intensities are effective for the enhancement of self-esteem.

Self-esteem in middle-aged women was directly analyzed in a few previous studies; specifically, the relationship between body esteem and self-esteem in middle-aged women was evaluated, and the results were mixed. Some studies have reported that body esteem was not related to global self-esteem and that BMI or body image did not play a significant role [27,41]. Contrary to this, different studies showed that more active middle-aged women reported significantly higher body esteem and global self-esteem [19,42]. A longitudinal study evaluating the exercise and self-esteem mode in middle-aged women also showed that women with lower BMI reported a higher level of physical self-worth, which was related to global self-esteem [43].

Our study has several limitations. Firstly, it was a cross-sectional study, thus, a proper randomization was not achieved and there is a possibility of a selection bias. Such a study also gives restrictions on drawing causal effects. Secondly, the results should be interpreted with caution because the study sample is too small to generalize the obtained results. Thirdly, self-reported questionnaires were used; however, these are the usual methods in the literature. These findings may have been influenced by the common methods bias. In the future, a longitudinal study conducted on a representative sample will provide a detailed analysis showing the impact of different variables on self-esteem in women.

5. Conclusions

The results of this study showed that physical activity levels are associated with self-esteem. Middle-aged women with higher physical activity levels had better self-esteem. Most middle-aged women reported high physical activity levels.
These results have clinical implications for the inclusion of PA in the lives of middle-aged women to improve self-esteem and mental health. Middle-aged women with low self-esteem may benefit from increasing their PA level, for example, by making walking a routine. A further study in a larger, representative sample of middle-aged women is warranted.

Author Contributions: Conceptualization, M.D.-G. and J.D.; methodology, M.D.-G. and J.D.; formal analysis, M.D.-G. and J.D.; investigation, M.D.-G. and J.D.; resources, M.D.-G. and J.D.; data curation, M.D.-G. and J.D.; writing—original draft preparation M.D.-G.; writing—review and editing, J.D.; visualization, M.D.-G.; supervision, J.D.; funding acquisition, M.D.-G. All authors have read and agreed to the published version of the manuscript.

Funding: This project was supported by a Medical University of Silesia in Katowice (Contract KNW-1-155/N/9/Z).

Institutional Review Board Statement: The study was conducted according to the guidelines of the Declaration of Helsinki, and approved by the Bioethical Committee of the Medical University of Silesia in Katowice PCN/022/KB1/147/1/19/20.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Conflicts of Interest: The authors declare no conflict of interest.

References
1. Lee, Y.K. Relationships between menopausal symptoms, depression, and exercise in middle-aged women: A cross-sectional survey. Int. J. Nurs. Stud. 2005, 45, 1816–1822. [CrossRef]
2. Jenczura, A.; Czajkowska, M.; Skrzypulec-Frankel, A.; Skrzypulec-Plinta, V.; Drozdzol-Cop, A. Sexual Function of Post-menopausal Women to Alcohol. Int. J. Environ. Res. Public Health 2018, 15, 1639. [CrossRef]
3. Amore, M.; Di Donato, P.; Papalini, A.; Berti, A.; Palareti, A.; Ferrari, G.; Chirico, C.; De Alosio, D. Psychological status at the menopausal transition: An Italian epidemiological study. Maturitas 2004, 48, 115–124. [CrossRef] [PubMed]
4. Czarnecka-Iwaniuk, M.; Stanislawksa-Kubiak, M.; Mojs, E.; Wilczak, M.; Samborski, W. Menopause symptoms versus life satisfaction and self-esteem among women. Menopause Rev. 2012, 6, 468–473. [CrossRef]
5. Hunter, M.; Rendall, M. Bio-psychosocio-cultural perspectives on menopause. Best Pract. Res. Clin. Obstet. Gynaecol. 2007, 21, 261–274. [CrossRef]
6. Bloch, A. Self-awareness during the menopause. Maturitas 2002, 41, 61–68. [CrossRef]
7. Włodarczyk, M.; Dolińska-Zygmunt, G. Role of the body self and self-esteem in experiencing the intensity of menopausal symptoms. Psychiatr. Pol. 2017, 51, 909–921. [CrossRef]
8. Kweon, Y.R.; Jeon, H.O. Effects of perceived health status, self-esteem and family function on expectations regarding aging among middle-aged women. J. Korean Acad. Nurs. 2013, 43, 176–184. [CrossRef]
9. Bandura, A. Self-efficacy: Toward a unifying theory of behavioral change. Psychol. Rev. 1977, 84, 191–215. [CrossRef]
10. Fox, K.R. Self-esteem, self-perceptions and exercise. Int. J. Sport Psychol. 2000, 31, 228–240. [CrossRef]
11. Sowislo, J.F.; Orth, U. Does low self-esteem predict depression and anxiety? A meta-analysis of longitudinal studies. Psychol. Bull. 2013, 139, 233–240. [CrossRef]
12. Mangweth-Matzek, B.; Hoek, H.V.; Rupp, C.I.; Kemmler, G.; Pope, H.G.; Kinzl, J. The menopausal transition—A possible window of vulnerability for eating pathology. Int. J. Eat. Disord. 2013, 46, 609–616. [CrossRef]
13. Elavsky, S. Physical activity, menopause, and quality of life: The role of affect and self-worth across time. Menopause 2009, 16, 265–271. [CrossRef]
14. Quiroga, A.; Larroy, C.; Gonzalez-Castro, P. Climacteric symptoms and their relation to feminine self-concept. Climacteric 2017, 20, 274–279. [CrossRef]
15. Nosek, M.; Kennedy, H.P.; Beyene, Y.; Taylor, D.; Gilliss, C.; Lee, K. The effects of perceived stress and attitudes toward menopause and aging on symptoms of menopause. J. Midwifery Woman’s Health 2010, 55, 328–334. [CrossRef]
16. McAuley, E.; Blissmer, B.; Katula, J.; Duncan, T.E.; Mihalko, S.L. Physical activity, self-esteem, and self-efficacy relationships in older adults: A randomized controlled trial. Ann. Behav. Med. 2000, 22, 131–139. [CrossRef] [PubMed]
17. Dąbrowska-Galas, M.; Dąbrowska, J.; Ptaszkowski, K.; Plinta, R. High Physical Activity Level May Reduce Menopausal Symptoms. Medicina 2019, 55, 466. [CrossRef]
18. McAuley, E.; Elavsky, S.; Motl, R.W.; Konopack, J.F.; Hu, L.; Marquez, D.X. Physical activity, self-efficacy and self-esteem: Longitudinal relationships in older adults. J. Gerontol. Ser. B Psychol. Sci. Soc. Sci. 2005, 60, 268–275. [CrossRef] [PubMed]
19. Dąbrowska, J.; Dąbrowska-Galas, M.; Naworska, B.; Wodarska, M.; Plinta, R. The role of physical activity in preventing obesity in midlife women. Prz. Menopauzalny 2015, 14, 13–19. [CrossRef] [PubMed]
20. Ayers, B.; Forshaw, M.; Hunter, M.S. The impact of attitudes towards the menopause on women’s symptom experiences: A systematic review. *Menopause* 2010, 17, 28-36. [CrossRef]

21. Slevic, J.H.; Tiggemann, M. Predictors of body dissatisfaction and disordered eating in middle-aged women. *Clin. Psychol. Rev.* 2011, 31, 515–524. [CrossRef]

22. Pilafova, A.; Angelone, D.G.; Bledsoe, K. The relationship between gender, BMI, self-esteem, and body esteem in college students. *Psi Chi J. Undergrad. Res.* 2007, 12, 24–30. [CrossRef]

23. Linde, J.A.; Rothman, A.J.; Baldwin, A.S.; Jeffery, R.W. The impact of self-efficacy on behavior change and weight change among overweight participants in a weight loss trial. *Health Psychol.* 2006, 25, 282–291. [CrossRef]

24. Teixeira, P.J.; Going, S.B.; Houtkooper, L.B.; Cussler, E.C.; Metcalfe, L.L.; Blew, R.M.; Sardinha, L.B.; Lohman, T.G. Pretreatment predictors of attrition and successful weight management in women. *Int. J. Obes.* 2004, 28, 1124–1133. [CrossRef]

25. Elavsky, S.; McAuley, E. Exercise and self-esteem in menopausal women: A randomized controlled trial involving walking and yoga. *Am. J. Health Promot.* 2007, 22, 83–92. [CrossRef]

26. Olchowska-Kotala, A. Body esteem and self-esteem in middle-aged women. *J. Women Aging* 2018, 30, 417–427. [CrossRef]

27. Laguna, M.; Lachowicz-Tabaczek, K.; Dzwonkowska, I. The Rosenberg Self-Esteem Scale: Polish adaptation of the scale. *Psychol. Społeczna* 2007, 2, 164–176.

28. Craig, C.L.; Marshall, A.L.; Sjöström, M.; Bauman, A.E.; Booth, M.L.; Ainsworth, B.E.; Pratt, M.; Ekelund, U.L.; Yngve, A.; Sallis, J.F.; et al. International physical activity questionnaire: 12-country reliability and validity. *Med. Sci. Sports Exerc.* 2003, 35, 1381–1395. [CrossRef]

29. International Physical Activity Questionnaire. Available online: http://www.ipaq.ki.se (accessed on 2 May 2021).

30. Heinemann, L.A.; Potthoff, P.; Schneider, H.P. International version of the Menopausal Rating Scale (MRS). *Health Qual. Life Outcomes* 2003, 1, 1–4. [CrossRef]

31. Sadiq, U.; Baig, K.B.; Mustafa, N. Translation and reliability analysis of menopause rating scale (MRS) in Urdu language. *J. Pak. Med. Assoc.* 2019, 69, 224–229.

32. Beck, A.T.; Steer, R.A.; Brown, G.K. *BDI-II: Beck Depression Inventory Manual*, 2nd ed.; Psychological Corporation: San Antonio, TX, USA, 1996.

33. North American Menopause Society (NAMS). Treatment of menopause-associated vasomotor symptoms: Position statement. *Menopause* 2004, 11, 3–11.

34. Karine, D.; Denis, P.; Remi, R.-L.; Irene, S.; Martin, B.; Jean-Marc, L.; et al. Effects of the menopausal transition on factors related to energy balance. A MONET group Study: I. Energy Expenditure. *Eur. J. Clin. Nutr.* 2013, 67, 407–411.

35. Lovejoy, J.; Champagne, C.; de Jonge, L.; Xie, H.; Smith, S. Increased visceral fat and decreased energy expenditure during the menopausal transition. *Int. J. Obes.* 2008, 32, 949–958. [CrossRef]

36. Bondarev, D.; Laakkonen, E.; Finni, T.; Kokko, K.; Kujala, U.M.; Aukee, P.; Kovanen, V.; Sipilä, S. Physical performance in relation to menopause status and physical activity. *Menopause* 2018, 25, 1432–1441. [CrossRef]

37. Kim, M.-J.; Cho, J.; Ahn, Y.; Yim, G.; Park, H.-Y. Association between physical activity and menopausal symptoms in perimenopausal women. *BMC Women's Health* 2014, 14, 122. [CrossRef] [PubMed]

38. Cheng, M.-H.; Wang, S.-J.; Yang, F.-Y.; Wang, P.-H.; Fuh, J.-L. Menopause and physical performance—A community-based cross-sectional study. *Menopause* 2009, 16, 892–896. [CrossRef]

39. Da Camara, S.M.A.; Zunzunegui, M.V.; Pirkle, C.; Moreira, M.A.; Maciel, A.C.C. Menopausal status and physical performance in middle aged women: A cross-sectional community-based study in northeast Brazil. *PLoS ONE* 2015, 10, e0119480. [CrossRef]

40. Abdulnour, J.; Doucet, E.; Brochu, M.; Lavoie, J.; Strychar, I.; Rabasa-Lhoret, R.; Prud’homme, D. The effect of the menopausal transition on body composition and cardiometabolic risk factors: A Montreal-Ottawa New Emerging Team group study. *Menopause* 2012, 19, 760–767. [CrossRef]

41. Mendelson, M.J.; Mendelson, B.K.; Andrews, J. Self-esteem, body esteem, and body-mass in late adolescence: Importance model needed? *J. Appl. Dev. Psychol.* 2000, 21, 249–266. [CrossRef]

42. Sonstroem, R.J.; Harlow, L.L.; Josephs, L. Exercise and self-esteem: Validity of model expansion and exercise association. *J. Sport Exerc. Psychol.* 1994, 16, 29–42. [CrossRef]

43. Elavsky, S. Longitudinal Examination of the Exercise and Self-Esteem Model in Middle-Aged Women. *J. Sport Exerc. Psychol.* 2010, 32, 862–880. [CrossRef]