Physical education and sport through the centuries
2026, 13(1), 5-24
ISSN 2335-0598

Original research article

DOI: 10.5937/spes2601005P

PILATES MODALITY AND WELL-BEING: A COMPARATIVE EVALUATION OF SOCIO-DEMOGRAPHIC AND QUALITY-OF-LIFE INDICATORS IN WOMEN

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ABSTRACT

Due to the everyday life stress, many individuals seek to enhance their quality of life (QoL) through physical activities that engage the whole body. Among the increasingly available techniques, the Pilates method stands out as a therapeutic and preventive model with the potential to improve QoL. The aim of this study was to examine and compare socio-demographic characteristics and QoL of women practicing Mat Pilates (MP, n=38) and Reformer Pilates (RP, n=38), aged 21–67. The analyzed baseline characteristics included age, anthropometric indicators (body height, body mass, BMI), age at menarche and menopause, duration of a single training session, and perceived exertion according to Borg's scale. Additionally, socio-demographic factors and Pilates-related variables were collected, while QoL was assessed using the WHOQOL-BREF questionnaire. The obtained results showed statistically significant between-group differences ($p<0.05$) only in participants' age and perceived exertion. Nevertheless, RP participants showed slightly higher QoL scores in the physical health domain (16.48±1.90 vs. 15.93±1.94), environment domain (14.33±2.30 vs. 14.09±1.96), and overall perceptions of QoL and general health (15.42±2.54 vs. 15.05±2.36). MP participants, however, scored marginally higher in psychological health (15.75±1.96 vs. 15.32±2.73) and social relationships (15.33±2.03 vs. 15.19±2.85). Overall, both groups expressed satisfaction with their QoL, with the highest levels noted in the physical health domain and the lowest in the environment domain. These findings across socio-demographic factors and QoL domains suggest that both Pilates modalities are positively associated with life quality in adult women.

Key words: lifestyle, physical activity, health, adult women.

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INTRODUCTION

Quality of life (QoL) is understood as a subjective perception of personal well-being and the degree to which individual needs are fulfilled (Krutsevich et al., 2021). It is commonly described as a multidimensional construct encompassing physical, psychological, and social well-being (Minayo et al., 2000). According to Cummins (1996), QoL is shaped by satisfaction across several life domains, including material and emotional well-being, productivity, intimacy, safety, community, and health. The notion of health-related QoL was introduced to capture the influence of health status on daily functioning (Kaplan & Bush, 1982), with physical, psychological, and social functioning representing its core components (Wassertheil-Smoller & Smoller, 2015). Empirical evidence indicates that physical activity plays a substantial role in enhancing health-related QoL, particularly in the areas of psychological well-being, physical functioning, and perceived energy levels (Rejeski et al., 1996; U.S. Department of Health and Human Services, 1996).

In the context of modernization, individuals increasingly seek strategies to enhance their overall QoL, a trend particularly evident in economically developed societies (Abdel-Hadi, 2012). Regular physical activity is widely recognized as one of the most effective approaches for improving well-being (Peluso & de Andrade, 2005), given its association with increased longevity and reduced risk of numerous chronic conditions (Warburton et al., 2006; Khan et al., 2012). Research consistently shows that physically active individuals report higher levels of QoL than sedentary individuals, as reflected in superior physical functioning, more positive perceptions of general health, and better mental well-being (Pisinger et al., 2009; Snyder et al., 2010). Namely, in response to daily stress, individuals increasingly engage in holistic physical activities to enhance well-being (de Jesus et al., 2013). Within the broad spectrum of physical activity programs, the Pilates method has emerged as a contemporary approach focused on developing balance, muscular strength, flexibility, and movement control (Gonçalves & Lima, 2014; Vancini et al., 2017; Flemig & Herring, 2018), and as a therapeutic and preventive practice capable of improving both physical and psychological aspects of QoL (da Silva Marques & de Abreu, 2007; Pereira et al., 2018; Silveira et al., 2022). By fostering a mind-body connection, Pilates may provide positive experiences that support psychological well-being (de Souza & Vieira, 2006) and it is suitable for individuals across different age groups and ability levels (Flemig & Herring, 2018; Oliveira et al., 2020). When practiced regularly, Pilates provides a range of physical and emotional advantages that contribute meaningfully to improved perceived QoL (Metz et al., 2021).

Pilates modality

Pilates encompasses mat-based and apparatus-based modalities, performed either on the mat or using equipment such as the Reformer, Cadillac, Wunda Chair, Barrels (Isacowitz, 2022), as well as small props (Boix-Vilella et al., 2017). Mat Pilates (MP), which relies primarily on body weight, is the most accessible and equipment-free format that is commonly applied in group fitness settings. However, it offers

limited progression and movement variability because the reliance on body weight alone may challenge the isolation of specific muscle groups and consistent technique, especially for beginners. In contrast, apparatus-based Pilates—particularly Reformer Pilates (RP)—on one side, provides more comprehensive training (adjustable resistance, enhanced movement precision, and controlled joint loading), enabling targeted muscle activation, improved postural alignment and reduction of posture-related discomfort (Das & Bandyopadhyay, 2023), an overall safer progression across different fitness and rehabilitation contexts; on the other side, the RP requires more space, financial investment, and technical familiarity. In spite of these distinctions, both modalities hold significant value in fitness and rehabilitation—their combined application yields complementary benefits for muscular strength, flexibility, balance, and overall functional well-being, reflecting the core principles of the Pilates method.

Research problem

Despite extensive research on Pilates, evidence regarding healthy populations remains limited, as most studies focus on elderly adults or individuals with medical conditions (Tolnai et al., 2016). Consequently, the present study examines potential differences in socio-demographic characteristics and life quality of women practicing different forms of Pilates. Addressing this question in healthy women is critical for advancing evidence-based exercise recommendations, elucidating modality-specific benefits, and informing strategies to optimize holistic well-being in preventive health contexts. The research problem specifically concerns the comparison of mat-based Pilates with Reformer Pilates, examining how each modality may differentially influence physical, psychological, and overall well-being in female practitioners.

METHOD

Study participants

An analysis program G*Power 3.1 was used to determine the sample size. An effect size (d) of 1.0, an alpha level of 0.05, and a power of 80% were assumed, so the estimated total sample size was 17 study participants per group. A convenient sample of 76 adult healthy women from Serbia participated in this cross-sectional study, divided into two groups—those who practice Mat Pilates (MP, n=38) and those who practice Reformer Pilates (RP, n=38), aged 21–67.

Study design, measures and procedures

A cross-sectional study design was used to compare socio-demographic characteristics and QoL of these two subgroups. The study was conducted in accordance with ethical standards of the Helsinki Declaration (WMA, 2013) and all participants provided informed consent.

The data used in this study are drawn from a field survey on individual's attitude towards Pilates and QoL. After obtaining the necessary consent, a link to a completely anonymous questionnaire was sent (via mail or viber) during October 2025, and

the survey results were automatically registered on the *Google Forms* website. This anonymous questionnaire contained 15 general questions about participant's lifestyle, health and habits (date of birth, municipality, self-reported body height and body mass, education level, employment status, marital and living status, age at menarche, menstrual status, age at menopause, number of children, current health status, consumption of tobacco, alcohol and intoxicating/illegal substances), 10 questions related to Pilates practice [length of Pilates practice, frequency of training sessions, duration of one training session, Borg's subjectively perceived exertion scale (Borg, 2007)], as well as 26 questions concerning their QoL, all of four domains: 1. physical health (7 questions), 2. psychological health (6 questions), 3. social relationships (3 questions), and 4. environment (8 questions), as well as overall perception of QoL and health in general (2 questions).

All collected data were self-reported. Age was accurately calculated based on the respondents' date of birth and the date the questionnaire was completed, as well as body mass index [BMI (kg/m^2) = body mass (kg) / body height^2 (m^2) (Đurašković, 2001)]. The age at menarche and menopause are the most critical data in terms of accuracy, considering that few women remember the exact date of their first menstruation, as well as when 12 months have passed since the last missed menstruation. For the assessment of participants' QoL, which refers to the last two weeks of their life, the WHOQOL-BREF questionnaire (Bosnian/Croatian/Serbian version) was used. This questionnaire is an abbreviated 26-item version of the WHOQOL-100 containing items that were extracted from the WHOQOL-100 field trial data; it is a generic health-related questionnaire developed by the WHOQOL group (WHO, 1996), which has been validated and has demonstrated good content validity, discriminate validity, test-retest reliability, and internal consistency (Harper & Power, 1998), and it was selected to quantify the health-related QoL of study participants. This questionnaire contains a total of 26 questions: two items pertain to the overall perception of QoL (question no. 1) and general health (question no. 2). The remaining 24 questions are designed to assess four QoL domains: physical health (questions no. 3, 4, 10, 15–18), psychological health (questions no. 5–7, 11, 19, 26), social relationships (questions no. 20–22), and environment (questions no. 8, 9, 12–14, 23–25). All questions utilize a 5-point Likert interval scale, with scores scaled in a positive direction (higher scores denote higher QoL), except for questions no. 3, 4, and 26. The raw scores were converted to transformed scores within a range of 4–20.

Statistical analysis

The descriptive statistics [average value (Mean), Standard Deviation (SD), Minimum (Min), Maximum (Max)] were summarized for all variables and for each of two subsamples, as well as for the entirety of the sample. Normality was tested using the one-sample Kolmogorov-Smirnov test (K-S) and due to the absence of a normal distribution in the case of certain tested variables a non-parametric analysis was applied. Namely, in order to determine the level of statistical significance of possible differences between the examined QoL variables between women practicing different forms of Pilates, the Mann-Whitney *U* test (U– contrast statistics, p– level of statistical

significance) was applied. The level of significance was set at $p<0.05$, and the data were analyzed using the Statistical Package for the Social Sciences, version 26.0 (IBM SPSS 26.0, SPSS Inc, Chicago, USA).

RESULTS AND DISCUSSION

Socio-demographic characteristics of the study participants

Table 1 presents the basic descriptive parameters of the self-reported (except for the Age) general indicators of the study participants, shown separately for each subgroup (specifically for MP and RP) as well as for the total sample, including the differences between these two subgroups (MP vs. RP). Table 2 displays the participants' self-reported demographic data.

Table 1. General indicators of the study participants: descriptive parameters, distribution normality, and differences between women practicing Mat and Reformer Pilates

Variables		Mat Pilates (n=38)	Reformer Pilates (n=38)	Mann-Whitney *U* test	Total sample (N=76)
Age [yrs]	*Mean±SD*	46.84±10.83	34.89±9.42	U=306.000, p= .000†	40.86±11.74
	Min – Max	22.92 – 67.66	21.28 – 56.06		21.28 – 67.66
	K-S (Sig.)	.772	.112		.315
BH [cm]	*Mean±SD*	167.61±5.57	168.08±5.90	U=688.000, p= .723	167.84±5.71
	Min – Max	156.0 – 178.0	156.0 – 178.0		156.0 – 178.0
	K-S (Sig.)	.361	.793		.547
BM [kg]	*Mean±SD*	66.31±9.07	64.78±12.83	U=593.500, p= .181	65.55±11.07
	Min – Max	50.0 – 80.0	46.5 – 115.0		46.5 – 115.0
	K-S (Sig.)	.334	.283		.128
BMI [kg/m^2]	*Mean±SD*	23.59±3.05	22.82±3.59	U=583.500, p= .150	23.21±3.33
	Min – Max	18.8 – 29.3	18.5 – 37.1		18.5 – 37.1
	K-S (Sig.)	.780	.193		.152
MENS [yrs]	*n*	38	37	U=699.000, p= .965	75
	Mean±SD	13.05±1.87	12.92±1.46		12.99±1.67
	Min – Max	10.0 – 20.0	11.0 – 17.0		10.0 – 20.0
	K-S (Sig.)	.110	.348		.018*
MENP [yrs]	*n*	16	2	U=7.500, p= .226	18
	Mean±SD	47.25±3.73	51.0±2.83		47.67±3.77
	Min – Max	39.0 – 54.0	49.0 – 53.0		39.0 – 54.0
	K-S (Sig.)	.756	.999		.766
PILDUR [min]	*Mean±SD*	59.08±3.04	58.29±3.90	U=663.500, p= .320	58.68±3.49
	Min – Max	45 – 60	45 – 60		45 – 60
	K-S (Sig.)	.000*	.000*		.000*
BORG20	*Mean±SD*	11.63±2.88	14.37±2.42	U=323.000, p= .000†	13.00±2.98
	Min – Max	6 – 17	7 – 19		6 – 19
	K-S (Sig.)	.004*	.162		.000*

Legend: n, N– number of study participants, Mean– average value, SD– standard deviation, Min– minimum, Max– maximum, K-S– Kolmogorov-Smirnov test, Sig.– significance, yrs– years, BH– body height, BM– body mass, BMI– body mass index, MENS– age at menarche, MENP– age at menopause, PILDUR–

duration of a single training session, BORG20– Borg's perceived exertion scale, U– contrast statistics, p– level of statistical significance.

* absence of normal distribution ($p<0.05$)

† statistically significant differences ($p<0.001$)

The impact of Pilates exercises on individuals across different age groups has been a focus of recent research– from children (Hornsby & Johnston, 2020; Ozturk & Unver, 2022) to older adults, i.e., elderly (García-Soidán et al., 2014; Campos de Oliveira et al., 2015). However, the majority of Pilates clients are middle-aged women (de Souza & Vieira, 2006), a finding that is also confirmed by the present study. Namely, this study included 76 female participants, numerically equal distributed into two groups of different ages. In the MP group, the majority were women in their sixth decade of life (n=13, 34.21%), followed by those in their fifth decade (n=11, 28.95%), fourth decade (n=6, 15.79%), seventh decade (n=5, 13.16%), and the fewest were in the third life decade (n=3, 7.89%). In contrast, the RP group is predominated by women in the third (n=14, 36.84%) and fourth decades of life (n=13, 34.21%), followed by those in the fifth decade (n=8, 21.05%) and sixth decade (n=3, 7.89%), with no participants in the seventh decade. Thus, it is evident that younger adult women (34.89±9.42 years) tend to choose RP, whereas older adult, i.e., middle-aged women (46.84±10.83 years) predominate in MP, although previous studies have shown that this method is beneficial across all age groups—from children, through adolescents and young adults, to older adults (Das & Bandyopadhyay, 2023). These differences were confirmed by the Mann-Whitney *U* test (U=306.00, $p<0.001$; Table 1). Regarding participants' education, the largest proportion held an university degree (MP: 52.63%, RP: 76.32%; Table 2). In terms of employment status, most participants in the MP group were employed in the public sector (n=18, 47.37%), whereas in the RP group, the majority were employed in the private sector (n=17, 44.74%). The majority of participants were married (MP: 71.05%, RP: 42.11%), with two children in the MP group (47.37%) and no children in the RP group (n=22, 57.89%) (see Table 2).

Table 2. Socio-demographic data of the study participants: frequency (f) and percentages (%)

Variables		MP (n=38)		RP (n=38)	
		f	%	f	%
Education level	High school	9	23.68	5	13.16
	College	8	21.05	1	2.63
	Faculty	20	52.63	29	76.32
	PhD	1	2.63	3	7.89
Employment status	Employed, private sector	12	31.58	17	44.74
	Employed, public sector	18	47.37	9	23.68
	+Employed, own company	4	10.53	10	26.32
	Unemployed	1	2.63	2	5.26
	Retired	3	7.89	-	-
Marital and living status	Living with parents	-	-	7	18.42
	Living alone	2	5.26	7	18.42
	Married	27	71.05	16	42.11
	Common-law marriage	5	13.16	7	18.42
	Divorced	3	7.90	1	2.63
	Widow	1	2.63	-	-
Number of children	One child	10	26.32	7	18.42
	Two children	18	47.37	9	23.68
	Three children	1	2.63	-	-
	More than three children	-	-	-	-
	No children	9	23.68	22	57.90
Menstrual status	Regular cycles	18	47.37	32	84.21
	Irregular cycles	2	5.26	3	7.90
	Pregnancy/ Brestfeeding	2	5.26	-	-
	Hysterectomy	2	5.26	1	2.63
	Menopause	14	36.84	2	5.26
Tobacco/cigarettes use	Yes, every day	8	21.05	12	31.58
	Occasionally	5	13.16	3	7.89
	No	25	65.79	23	60.53
Alcohol consumption	Yes, every day	1	2.63	-	-
	Occasionally	20	52.63	25	65.79
	No	17	44.74	13	34.21
illicit substances use	Yes, every day	-	-	-	-
	Occasionally	-	-	-	-
	No	38	100	38	100
Length of Pilates practice	Less than 3 months	3	7.89	6	15.79
	3–6 months	7	18.42	9	23.68
	6–12 months	4	10.53	4	10.53
	More than 12 months	24	63.16	19	50
Frequency of training sessions	Once per week	1	2.63	-	-
	2–3 times per week	33	86.84	37	97.37
	More than 3 times per week	4	10.53	1	2.63

Legend: MP– Mat Pilates, **RP**– Reformer Pilates, **f**– frequency, **PhD**– Doctor of Philosophy.

The Body Mass Index (BMI) was developed as an indicator of disease risk – as the index increases, so does the risk of certain conditions. This primarily refers to conditions associated with overweight and obesity, such as premature mortality, cardiovascular diseases, hypertension, osteoarthritis, certain types of cancer, and diabetes (WHO, 2010). Self-reported body height and body mass are frequently used to calculate BMI in order to quantify overweight and obesity in epidemiological studies (The Global BMI Mortality Collaboration, 2016), due to the ease of data collection, logistical convenience, and lower costs and time requirements associated with questionnaires or interviews compared to direct anthropometric measurements (Peixoto et al., 2006). Although self-reported values are subject to limitations such as social desirability bias (Burke & Carman, 2017), recall difficulties, and subjective perception of body image (Madrigal et al., 2000), it has been demonstrated that self-reported body height and body mass, and consequently BMI, represent valid and reliable measures (Teixeira et al., 2021). In this study, no significant differences were observed between the two subgroups of participants regarding self-reported body height and body mass, nor in BMI. Based on Table 1 and the BMI classification scale (Ross & Janssen, 2007), the participants can be considered, on average, of normal weight, with healthily recommended BMI values ranging from 19.0 to 24.9 kg/m^2. However, when examining each subgroup individually—particularly the MP and RP group—minor differences emerge. The majority of participants fall within the normal weight range, with a higher proportion in the RP group (65.79% vs. 81.58%, respectively), followed by the overweight category, which is more prevalent in the MP group (34.21% vs. 15.79%, respectively). Obesity was observed in only one participant from the RP group (BMI=37.1 kg/m^2). Considering that these values are based on self-reported body height and body mass, they should be interpreted with caution, as BMI values tend to be underestimated on average, potentially leading to a lower observed obesity prevalence in this population when using self-reported data (Burke & Carman, 2017).

Menarche is defined as the onset of menstruation which occurs usually between 12 and 13 years of age (Bennell, 2002). It marks the beginning of a woman's reproductive life and is considered one of the most significant events during female puberty. The timing of menarche has important implications for female fertility (McKibben & Poston Jr, 2003; Pascual et al., 2005) and can also serve as an indicator of potential health complications later in life. Early menarche is associated with an increased risk of certain diseases, including breast cancer and cardiovascular conditions (Dvornyk, 2012). Generally, early menarche (before the age of 12) is linked to higher mortality rates (Lakshman et al., 2009). Conversely, there is a positive correlation between early menarche and higher bone mineral density (Ito et al., 1995). In the present study, participants reported an average age at menarche around 13 years (Table 1). In the MP group, the earliest reported menarche occurred at age 10 and the latest at age 20, each reported by one participant; the majority experienced menarche at 12 years of age (n=11, 28.95%), slightly fewer at age 13 (n=9, 23.68%), and five participants (13.16%) each reported menarche at ages 11, 14, and 15. In the RP subgroup, the most numerous are those that reported menarche at age 13 (n=10, 26.32%); an equal

number reported menarche at ages 12 and 14 (n=8, 21.05%); followed by those at age 11 (n=7, 18.42%), age 15 (n=2, 5.26%), and one participant each at ages 16 and 17. Most of the participants had regular menstrual cycles (MP: 47.37%, RP: 84.21%), with one participant in the RP group presenting amenorrhea (a genetic anomaly), and two participants in the MP group entering menopause at ages 39 and 48 due to hysterectomy. Menopause is a retrospective diagnosis, considered to have occurred when menstrual activity ceases for at least 12 consecutive months in the absence of any other physiological or pathological explanation, marking the end of reproductive life and ovarian follicular activity. In Europe, specifically in the United Kingdom, the average age of menopause is 51 years, with any onset before 45 years considered early menopause (Talaulikar, 2022). On average, participants in this study did not experience early menopause (see Table 1). In the RP group, which encompassed younger participants, two women were in natural menopause at ages 49 and 53, whereas in the MP group, 14 women were in menopause, three of whom experienced it before the age of 45 (Table 2). Also, it should be noted that RP represents a form of resistance training, and weight-bearing exercise has been shown to significantly enhance bone mineral density, which is particularly important in (post)menopausal women (Zhao et al., 2025). However, multiple factors influence the timing of menopause, including diet, BMI, socio-economic background, ethnicity, cultural beliefs, medical/gynecological health issues, level of physical activity, and smoking status (Gold, 2011; Schoenaker et al., 2014). Most participants in this study did not consume tobacco/cigarettes (MP: 65.79%, RP: 60.53%), none reported the use of intoxicating/illicit substances, although the majority consumed alcohol occasionally (MP: 52.63%, RP: 65.79%) (Table 2). Regarding Pilates practice, most participants had been practicing for more than 12 months (MP: 63.16%, RP: 50%), two to three times per week (MP: 86.84%, RP: 97.37%) (Table 2), with sessions lasting 45 to 60 minutes. The RP group reported a significantly higher subjective perception of exertion, as measured by the Borg scale (Table 1).

Quality of life of the study participants

There is no universally accepted definition of QoL, but most authors consider it to be emotionally nuanced and therefore contains a strong subjective component. In this context, QoL refers to an individual's subjective satisfaction across various life domains, typically including health, relationships, emotional, social, and physical functioning, as well as happiness and overall satisfaction with life circumstances and finances (Renwick & Brown, 1996). Thus, it is a broad concept influenced in a complex manner by an individual's physical health, psychological state, a level of independence, social relationships, personal beliefs, and their interaction with significant environmental characteristics (Chatzilelecas et al., 2015). Table 3 presents the basic statistics of the assessed QoL parameters for women practicing two different forms of Pilates (for each subsample separately and for the overall sample), as well as the differences between the two subgroups. Generally, it can be observed that both subgroups reported very good average ratings (MP: 3.79; RP: 3.82, out of a maximum rating of 5), which are higher compared to other populations (Purba et al., 2018). The

lowest scores were reported in Domain 4 (environment), which is consistent with findings in other studies (Akvardar et al., 2006). In the MP group, two participants around 50 years of age reported lower scores, with an average self-assessed QoL rating of 2.92 and 3.12, respectively. However, in the RP group, which mostly included considerably younger participants (around 25 years old), unmarried and without children, lower satisfaction with QoL was observed, a finding supported by previous research (Hasyim et al., 2024; Wodarz & Rogowska, 2024). For both subgroups, the highest scores were reported for Domain 1, i.e., physical health (MP: 15.93, RP: 16.48, out of a maximum of 20 points). Two possible explanations for this outcome can be proposed: 1) regular physical activity had the greatest impact on participants' physical health compared to the other three domains, as the health benefits of physical activity are well-established (Rozanski, 2023), or 2) participants initially had an adequate level of physical health, which is itself a determinant for engaging in a physically active lifestyle, alongside factors such as age, gender, self-confidence, and motivation (Bauman et al., 2012). Statistically, no significant differences were found between the QoL of women in the MP and RP groups in any of the four domains, or in the overall scores.

Table 3. Quality of life of the study participants: descriptive parameters, distribution normality, and differences between women practicing Mat and Reformer Pilates

Variables		Mat Pilates (n=38)	Reformer Pilates (n=38)	Mann-Whitney *U* test	Total sample (N=76)
Overall	*Mean±SD*	15.05±2.36	15.42±2.54	U=657.500, p= .477	15.24±2.44
	Min – Max	8.0 – 20.0	8.0 – 20.0		8.0 – 20.0
	K-S (Sig.)	.011*	.048*		.000*
Dom1	*Mean±SD*	15.93±1.94	16.48±1.90	U=607.000, p= .230	16.2±1.93
	Min – Max	12.0 – 19.43	12.57 – 20.0		12.0 – 20.0
	K-S (Sig.)	.809	.754		.590
Dom2	*Mean±SD*	15.75±1.96	15.32±2.73	U=697.000, p= .794	15.53±2.37
	Min – Max	10.0 – 20.0	9.33 – 19.33		9.33 – 20.0
	K-S (Sig.)	.297	.285		.035*
Dom3	*Mean±SD*	15.33±2.03	15.19±2.85	U=706.000, p= .864	15.26±2.46
	Min – Max	10.67 – 20.0	6.67 – 20.0		6.67 – 20.0
	K-S (Sig.)	.031*	.257		.006*
Dom4	*Mean±SD*	14.09±1.96	14.33±2.30	U=660.500, p= .521	14.21±2.13
	Min – Max	10.5 – 18.5	7.5 – 20.0		7.5 – 20.0
	K-S (Sig.)	.903	.861		.730

Legend: n, N– number of study participants, **Mean**– average value, **SD**– standard deviation, **Min**– minimum, **Max**– maximum, **K-S**– Kolmogorov-Smirnov test, **Sig.**– significance, **Overall**– overall perception of QoL and general health, **Dom1**– domain 1: physical health, **Dom2**– domain 2: psychological health, **Dom3**– domain 3: social relationships, **Dom4**– domain 4: environment, **U**– contrast statistics, **p**– level of statistical significance.

* absence of normal distribution (p<0.05)

Although a statistically significant age difference was observed between the two groups (see Table 1), this did not appear to systematically influence QoL outcomes. Previous research has shown that age can affect QoL perceptions across different life domains (Akvardar et al., 2006; Purba et al., 2018), with younger and middle-aged adults often experiencing distinct life priorities and stressors. However, both groups in the present study demonstrated similarly high QoL scores across all four WHOQOL-BREF domains (see Table 3), with no statistically significant differences observed between MP and RP participants. This finding suggests that regular Pilates practice may be associated with perceived life quality across different age groups. The well-documented benefits of physical activity on both psychological and physical well-being (Peluso & de Andrade, 2005; Warburton et al., 2006) may transcend age-related differences in life circumstances. Indeed, Pilates has been shown to be beneficial across diverse age groups, from children (Hornsby & Johnston, 2020; Ozturk & Unver, 2022) to older adults (García-Soidán et al., 2014; Campos de Oliveira et al., 2015), supporting its adaptability to different life stages. The comparable QoL profiles observed in this study, despite the 12-year mean age difference between groups, reinforce the notion that both Mat and Reformer Pilates are equally beneficial regardless of participants' age.

Table 4 presents the prevalence of assessed QoL ratings, by domain, among women practicing MP and those practicing RP, where higher ratings indicate a higher QoL. It can be observed that ratings of 3 (moderately/neither satisfied nor dissatisfied), 4 (good/mostly/satisfied), and 5 (completely/very good/very satisfied), predominated, reflecting, respectively, moderate, good, and excellent levels of participants' self-assessed QoL, health status, and other life domains, as confirmed by the calculated mean values (see Table 3).

Physical education and sport through the centuries
2026, 13(1), 5-24
ISSN 2335-0598

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Table 4. Quality of life of women practicing Mat (n=38) and Reformer Pilates (n=38): prevalence by ratings

No.	Questions / Ratings	1		2		3		4		5	
Overall		MP	RP	MP	RP	MP	RP	MP	RP	MP	RP
Q1	How would you rate your QoL?	-	-	1(2.63%)	2(5.26%)	9(23.68%)	7(18.42%)	23(60.53%)	21(55.26%)	5(13.16%)	8(21.05%)
Q2	How satisfied are you with your health?	-	-	2(5.26%)	1(2.63%)	10(26.32%)	8(21.05%)	24(63.16%)	25(65.79%)	2(5.26%)	4(10.53%)
Dom1		MP	RP	MP	RP	MP	RP	MP	RP	MP	RP
Q3	To what extent do you feel that (physical) pain prevents you from doing what you need to do?	-	-	-	1(2.63%)	14(36.84%)	5(13.16%)	10(26.32%)	11(28.95%)	**14(36.84%)**	**21(55.26%)**
Q4	How much do you need any medical treatment to function in your daily life?	-	-	1(2.63%)	-	3(7.89%)	2(5.26%)	10(26.32%)	3(7.89%)	**24(63.16%)**	**33(86.84%)**
Q10	Do you have enough energy for everyday life?	-	-	-	3(7.89%)	8(21.05%)	8(21.05%)	**26(68.42%)**	**20(52.63%)**	4(10.53%)	7(18.42%)
Q15	How well are you able to get around?	-	-	2(5.26%)	2(5.26%)	4(10.53%)	5(13.16%)	15(39.47%)	14(36.84%)	**17(44.74%)**	**17(44.74%)**
Q16	How satisfied are you with your sleep?	3(7.89%)	1(2.63%)	6(15.79%)	3(7.89%)	11(28.95%)	10(26.32%)	**16(42.11%)**	**19(50%)**	2(5.26%)	5(13.16%)
Q17	How satisfied are you with your ability to perform your daily living activities?	-	-	1(2.63%)	1(2.63%)	8(21.05%)	4(10.53%)	**21(55.26%)**	**21(55.26%)**	8(21.05%)	12(31.58%)
Q18	How satisfied are you with your capacity for work?	-	1(2.63%)	1(2.63%)	1(2.63%)	4(10.53%)	6(15.79%)	**28(73.68%)**	**25(65.79%)**	5(13.16%)	5(13.16%)
Dom2		MP	RP	MP	RP	MP	RP	MP	RP	MP	RP
Q5	How much do you enjoy life?	1(2.63%)	-	1(2.63%)	5(13.16%)	10(26.32%)	11(28.95%)	**21(55.26%)**	**15(39.47%)**	5(13.16%)	7(18.42%)
Q6	To what extent do you feel your life to be meaningful?	-	-	-	2(5.26%)	2(5.26%)	4(10.53%)	**21(55.26%)**	10(26.32%)	15(39.47%)	**22(57.89%)**
Q7	How well are you able to concentrate?	-	1(2.63%)	-	2(5.26%)	6(15.79%)	12(31.58%)	**25(65.79%)**	**15(39.47%)**	7(18.42%)	8(21.05%)
Q11	Are you able to accept your bodily appearance?	1(2.63%)	-	-	1(2.63%)	8(21.05%)	8(21.05%)	14(36.84%)	12(31.58%)	**15(39.47%)**	**17(44.74%)**
Q19	How satisfied are you with yourself?	-	1(2.63%)	1(2.63%)	-	7(18.42%)	10(26.32%)	**25(65.79%)**	**24(63.16%)**	5(13.16%)	3(7.89%)
Q26	How often do you have negative feelings such as blue mood, despair, anxiety, depression?	1(2.63%)	-	3(7.89%)	9(23.68%)	14(36.84%)	11(28.95%)	**15(39.47%)**	**14(36.84%)**	5(13.16%)	4(10.53%)
Dom3		MP	RP	MP	RP	MP	RP	MP	RP	MP	RP
Q20	How satisfied are you with your personal relationships?	-	-	-	1(2.63%)	7(18.42%)	5(13.16%)	**25(65.79%)**	**25(65.79%)**	6(15.79%)	7(18.42%)

Q21	How satisfied are you with your sex life?	1(2.63%)	2(5.26%)	2(5.26%)	6(15.79%)	13(34.21%)	9(23.68%)	**19(50%)**	**13(34.21%)**	3(7.89%)	8(21.05%)
Q22	How satisfied are you with the support you get from your friends?	-	-	1(2.63%)	2(5.26%)	4(10.53%)	7(18.42%)	**27(71.05%)**	**22(57.89%)**	6(15.79%)	7(18.42%)
Dom4		MP	RP	MP	RP	MP	RP	MP	RP	MP	RP
Q8	How safe do you feel in your daily life?	-	-	-	3(7.89%)	6(15.79%)	7(18.42%)	**25(65.79%)**	**21(55.26%)**	7(18.42%)	7(18.42%)
Q9	How healthy is your physical environment?	8(21.05%)	5(13.16%)	4(10.53%)	4(10.53%)	**14(36.84%)**	**16(42.11%)**	9(23.68%)	9(23.68%)	3(7.89%)	4(10.53%)
Q12	Have you enough money to meet your needs?	-	1(2.63%)	2(5.26%)	2(5.26%)	15(39.47%)	9(23.68%)	**18(47.37%)**	**18(47.37%)**	3(7.89%)	8(21.05%)
Q13	How available to you is the information that you need in your day-to-day life?	-	-	-	-	4(10.53%)	2(5.26%)	**23(60.53%)**	14(36.84%)	11(28.95%)	**22(57.89%)**
Q14	To what extent do you have the opportunity for leisure activities?	-	-	4(10.53%)	3(7.89%)	6(15.79%)	11(28.95%)	**20(52.63%)**	**13(34.21%)**	8(21.05%)	11(28.95%)
Q23	How satisfied are you with the conditions of your living place?	1(2.63%)	1(2.63%)	4(10.53%)	4(10.53%)	1(2.63%)	8(21.05%)	**25(65.79%)**	**15(39.47%)**	7(18.42%)	10(26.32%)
Q24	How satisfied are you with your access to health services?	7(18.42%)	7(18.42%)	12(31.58%)	**15(39.47%)**	**13(34.21%)**	9(23.68%)	6(15.79%)	4(10.53%)	-	3(7.89%)
Q25	How satisfied are you with your transport?	1(2.63%)	3(7.89%)	5(13.16%)	2(5.26%)	14(36.84%)	14(36.84%)	**18(47.37%)**	**17(44.74%)**	-	2(5.26%)

Legend: MP– Mat Pilates, **RP**– Reformer Pilates, **1, 2, 3, 4, 5**– ratings, where rating 1 is the lowest, and rating 5 the highest, **QoL**– quality of life, **Overall**– overall perception of QoL and general health, **Dom1**– domain 1: physical health, **Dom2**– domain 2: psychological health, **Dom3**– domain 3: social relationships, **Dom4**– domain 4: environment, **No.**– number, **Q**– question.

Note: All results are presented as absolute (n) and relative values (%) – n(%).

A rating of 1 (very dissatisfied/very poor) was recorded in both subgroups for questions no. 9, 16, 21, and 23–25, with the MP group also reporting such ratings for questions no. 5, 11, and 26, and the RP group for questions no. 7, 12, 18, and 19. A rating of 2 (poor/dissatisfied/a little) in the RP group was absent only for questions no. 4, 13, and 19, and in the MP group for questions no. 3, 6–8, 10, 11, 13, and 20. The results obtained—high scores across all domains and the absence of differences between the subgroups—might indicate that both forms of Pilates contribute equally to the QoL of women across different age groups and should be recommended in the absence of medical contraindications for exercise.

Study limitations and future perspectives

The primary limitation of this study stems from its design, as causal inference is inherently constrained by the cross-sectional nature of the research. A more comprehensive understanding of modality-specific effects on QoL over time would require longitudinal or intervention-based study designs. Also, age was not included as a covariate in the primary comparative analyses due to the exploratory and descriptive nature of this cross-sectional study. However, the substantial age difference between groups is acknowledged and discussed as a potential confounding factor that warrants statistical control in future confirmatory research. Furthermore, the relatively small sample size, age heterogeneity among participants, and the inclusion of individuals from a single country limit the generalizability of the findings. This is particularly relevant given that cultural, socioeconomic, and fitness industry-related differences are known to influence both participation in Pilates programs and perceived QoL. Additionally, the reliance on self-reported data—specifically subjective assessments—represents a notable limitation, as it may compromise the accurate interpretation of the relationship between perceived QoL and Pilates modality. To advance knowledge in this field, future research should prioritize the following directions:

- conducting adequately powered randomized controlled trials or longitudinal studies to allow for an in-depth evaluation of the effects of MP and RP on QoL;
- integrating both subjective QoL measures and objective indicators of health status and functional fitness;
- recruiting larger and more diverse samples, including participants from different cultural backgrounds, to enable the examination of sex- and population-specific responses;
- incorporating additional psychological variables that may differentiate Pilates modalities, such as stress levels, self-efficacy, and body image;
- examining the relationship between QoL outcomes and dose-response parameters, including exercise frequency, intensity, and duration.

CONCLUSION

The aim of this study was to compare the socio-demographic characteristics and perceived life quality in adult healthy women practicing two different forms of Pilates. The findings indicate that women practicing Mat Pilates and Reformer Pilates share broadly similar socio-demographic profiles, suggesting that both modalities attract comparable segments of the adult female population. No meaningful differences were observed in BMI, education level, employment status, or length of training, indicating that both forms of Pilates are similarly accessible and appealing across diverse backgrounds. The main exceptions were age distribution, with younger adult women being more represented in the Reformer Pilates group, and subjective perception of exertion, as measured by the Borg scale, which was reported as higher among Reformer Pilates participants. Nevertheless, future studies employing age-matched designs or statistical adjustment for age as a covariate (e.g., ANCOVA) would strengthen conclusions regarding modality-specific effects and eliminate age as a potential confounding variable.

The similarity in training habits and prior physical-activity experience further supports the notion that both forms of Pilates attract women with similar lifestyle patterns and levels of health awareness. The comparison of quality-of-life indicators revealed generally high scores across all assessed domains and no statistically significant differences between Mat Pilates and Reformer Pilates participants. These findings suggest that both Pilates modalities are similarly associated with the positive perception of well-being among adult women. Physical, psychological, and social aspects of life quality were uniformly rated positively, highlighting favorable quality-of-life profiles among women practicing Pilates, regardless of modality. The absence of group differences implies that the choice between Mat and Reformer Pilates may depend more on personal preference or logistical factors than on differences in perceived quality-of-life outcomes. However, given the accelerated decline in skeletal integrity that accompanies menopause, and the established role of resistance exercise in preserving bone mass and improving musculoskeletal health in women, the resistance-training nature of Reformer Pilates warrants further investigation in future studies focusing on musculoskeletal outcomes in adult women.

In conclusion, both Pilates forms may support stable health-related habits among adult women. The consistent findings across socio-demographic factors and life quality domains reinforce the notion that Mat Pilates and Reformer Pilates are similarly accessible and forms of mind-body training associated with favorable well-being outcomes. Overall, the study demonstrates that while Mat Pilates and Reformer Pilates differ in structure and equipment, they are associated with comparable socio-demographic profiles and perceived quality-of-life outcomes among the women who practice them.

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Received on 28.11.2025.
Accepted on 20.12.2025.