Menopause, Physical Activity and Mental Well-Being

Final report for SAMH

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Table of contents

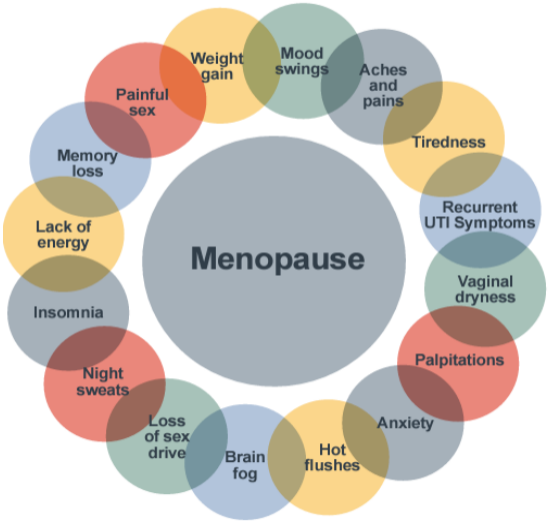
Acknowledgements

This project has been a truly collaborative effort between University of Edinburgh and SAMH. However, the project would not have been possible without the generous time of the participants who shared their experiences through the questionnaire and the focus groups. We felt hugely privileged to gain insight into the participants' experiences, and we hope the report fully represents their experiences.

Background[1]

In 2021, the Scottish Government launched a Women's Health Plan, acknowledging the need to better support the ~400,000 women of menopausal age (1). In the UK, the menopause usually occurs between 45-55 years, and the average age of menopause is 51 (2). Menopause is clinically diagnosed at 12 months after the final menstrual period although the peri-menopause (time leading up to menopause) and post-menopausal stages of reproductive aging are also critical phases of this transition (3). We have opted to use the term 'menopause life stage' to capture these phases.

Figure 1: Menopause-related symptoms (1)



In addition to the presence or absence of menstrual periods, there are many other physical and mental health symptoms associated with the menopause life stage (Figure 1 from the Women's Health Plan)(1). In relation to mental well-being, a UK survey (n=3725, 40-65yrs) showed 47% of menopausal women reported feeling depressed and 37% suffered from anxiety (4).

Whilst medical intervention (e.g., HRT) is an option, lifestyle changes can also support women. Indeed, the Women's Health Plan highlights that this key life stage may provide an opportunity to promote healthy lifestyle choices, including physical activity.

Physical activity is defined as any bodily movement produced by skeletal muscles that requires energy expenditure (5). Meeting recommended levels of physical activity (5) leads to physical and mental health benefits (6-8). However, there is clear evidence of a decrease in the percentage of women achieving recommended physical activity levels around the menopause life stage. For example, the Scottish Health Survey (2021)(9) reported declines in the percentage of women meeting the recommended levels of both moderate to vigorous physical activity (MVPA) and muscle strengthening from 40% at aged 35-44 years to 34% at aged 45-54 years, and 28% at aged 55-64 years.

There is also a growing evidence base for the benefits of physical activity during the menopause life stage, with review-level evidence now available to support the benefits for general health and well-being (10-13), managing menopausal symptoms (14-17), and as a protective strategy for longer term morbidity (e.g. osteoporosis (18)).

The overall aim of this research was to increase knowledge around the intersection of the menopause and its impact on both physical activity and mental wellbeing. To fulfil this aim, there were two objectives:

[1] Further detail on the definitions of menopause and the evidence of the benefits of physical activity are available in the consultancy interim report 'The Menopause, Physical Activity, and Mental Well-Being Consultancy Project: Brief Evidence Review (Setting the Scene)' available from the researchers, on request

1) To better understand women's experiences of menopausal symptoms, and the impact of these symptoms on both mental well-being and physical activity.
2) To better understand women's experiences of being physically active during the menopause life stage.

In autumn 2022, an online questionnaire was used to address the first objective, and a series of focus groups were undertaken to achieve objective two.

In consultation with SAMH, recommendations were made to inform SAMH's approach in advocating for women during the menopausal life stage to help them to be physically active and support their mental wellbeing.

Part 1: Questionnaire Data Collection: Understanding women's experiences of menopausal symptoms, and the impact of these symptoms on both mental well-being and physical activity

Data collection

Data were collected from 12th October–7th November 2022 using an online questionnaire and participants were invited to participate via several recruitment routes including social media, and SAMH's partnership networks. The questionnaire was divided into five sections incorporating demographic questions; current menopausal status and commonly experienced symptoms; physical activity behaviour; the impact of the experience of menopause physical activity and mental well-being; and current mental well-being.

Participants

Data screening

At the close of the questionnaire there were 1229 responses. Prior to analysis, the data were screened (see Figure 1) to exclude participants who had not formally 'submitted' their response (n=407), participants who were aged 35 or under (n=95), and any duplicate responses (n=72). This provided a data set of 655 complete responses.

Demographic characteristics

Table 1 provides a summary of demographic characteristics for the included 655 participants. The average age was 49.9 years and ranged from 36 to 67, with 44% less than 50 years, 52.7% between 50-59 years and only 4% 60 years or over. The majority of participants were White (96.2%), with a gender identity that matched the sex assigned at birth (99.1%). Based on reported postcode, we identified participants' Scottish Index of Multiple Deprivation (SIMD) classification as an indicator of socio-economic status. Nearly 25% provided a postcode that was not found in the SIMD database, potentially because the participants lived out with Scotland. From available data, there was representation of socio-economic status across all five categories, but with a skew towards areas of more affluence. Just over half of the sample reported that they are currently taking hormone replacement therapy (HRT).

Figure 2: Numbers at each stage of data screening

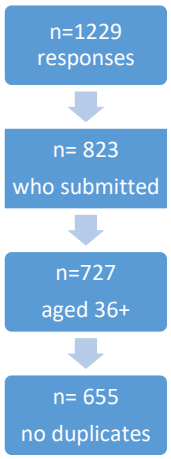


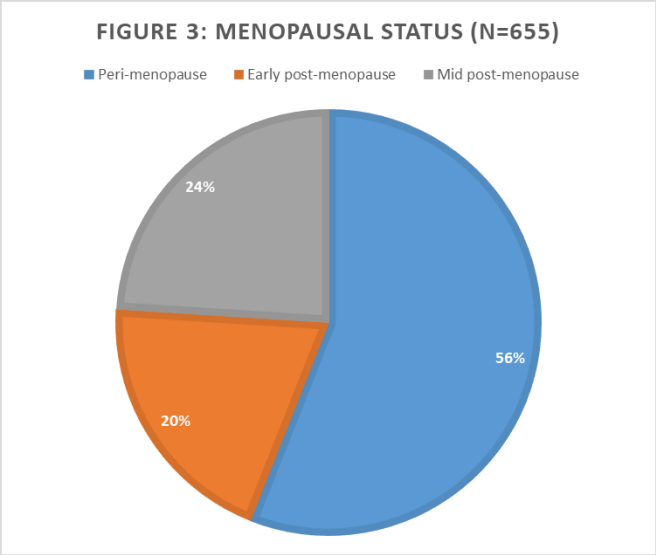
Table 1: Demographic characteristics of questionnaire sample

Demographic characteristic	**n**	**%**
Age		
<50 years	278	44.3
50- 59 years	324	51.7
≥60 years	25	4.0
Ethnicity		
White	630	96.2
Asian, Scottish Asian, British Asian	14	2.1
African, Scottish African British African	9	1.4
Caribbean or Black	1	0.2
Prefer not to say	1	0.2
Gender identity same as sex at birth		
Yes	631	99.1
No	4	0.6
Prefer not to say	2	0.3
SIMD Quintiles (where data available)		
1 most deprived	39	7.9
2	77	15.7
3	88	17.9
4	138	28
5 least deprived	150	30.5
Currently taking any form of prescribed HRT		
Yes	337	51.5
No	317	48.5

NB Missing data due to respondents not answering the question or postcode supplied outside SIMD range.

Menopausal status

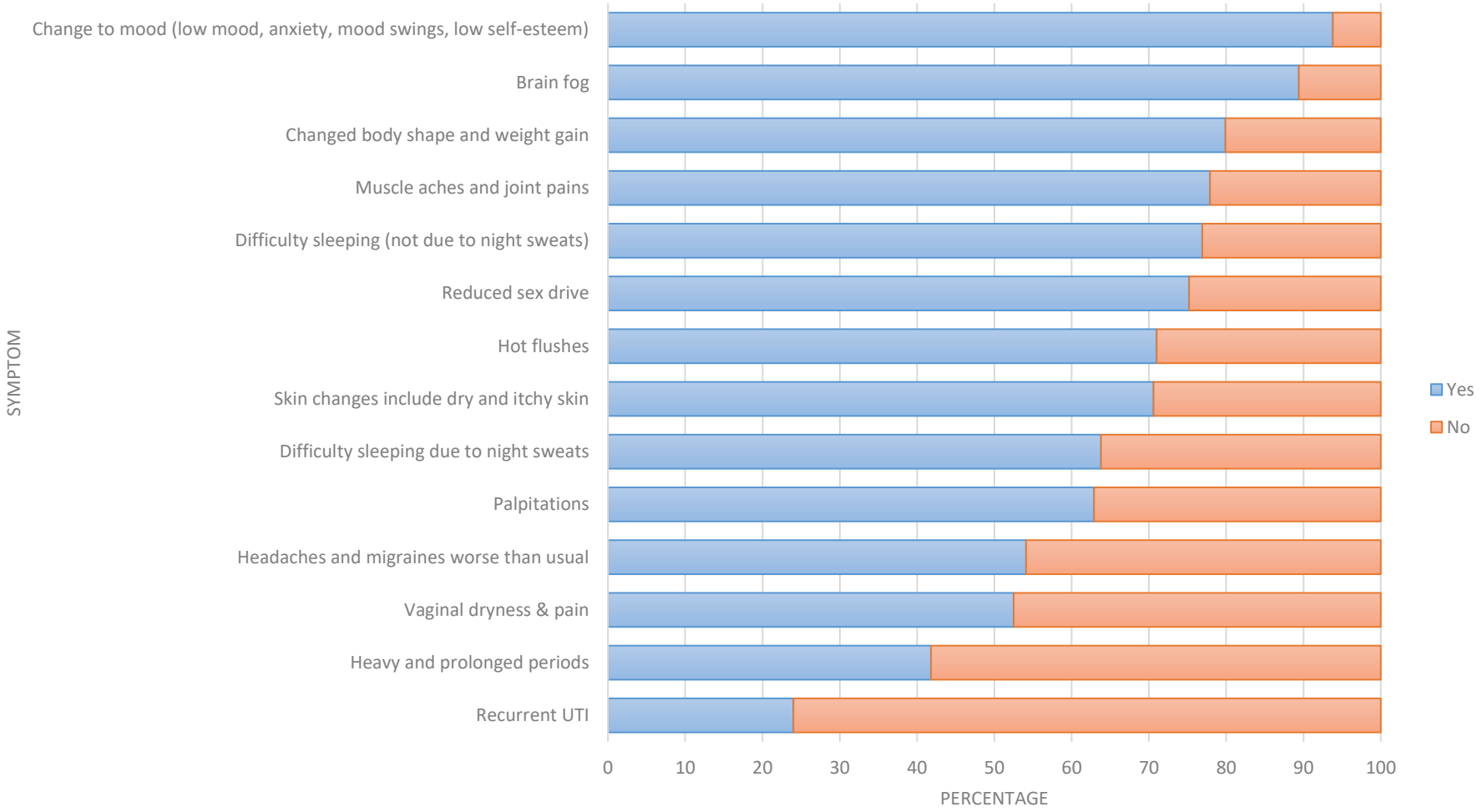
As illustrated in Figure 3, the majority (56%) of participants reported that they were peri-menopausal (i.e., periods had not yet been absent for 12 months), with 20% early post-menopause (i.e., up to 2 years since last period), and 24% mid post-menopause (2-8 years since last period).



Menopausal symptoms

We presented a range of menopausal symptoms as outlined on the NHS website (19), adding one additional symptom relating to difficulty sleeping (but not due to night sweats), and participants indicated if they had or had not experienced each symptom (i.e., responded 'yes' or 'no'). Figure 4 illustrates the responses in order from the highest proportion of 'yes' responses to the lowest.

Figure 4: Percentage of participants experiencing common menopausal symptoms



Participants were also invited to list any additional symptoms that they experienced that were not included in the first question. Figure 4 illustrates a word cloud created from these responses. The size of the text represents the frequency of reporting of each symptom (i.e., largest text is most commonly reported).

Figure 5: Word cloud illustrating additional menopausal symptoms experienced by participants

Mental well-being levels (WEMWBS)

As is evident from the symptoms that participants reported experiencing, it appears that the menopause life stage brought mental health challenges for this sample of participants. This observation was further supported by the results of participants' scores on the 14-item Warwick and Edinburgh Mental Well-Being Scale (WEMWBS), which was used to assess mental well-being over the last two weeks. Table 2 presents the mean WEMWBS score for the whole sample (n=637 with valid data) and by menopausal status. Peri-menopausal participants scored lowest, with slight increases in the two post-menopausal groups.

Table 2: WEMWBS average scores for all participants and by menopausal status compared with SHeS 2021 results for women

Current sample by menopausal stage	WEMWBS Mean Score (SD)	Scottish Health Survey sample by age	WEMWBS Mean Score (SE)
All	41.1 (9.1)	All	48.3 (0.23)
Peri-menopausal	40.3 (8.5)	35-44	46.5 (0.58)
Early post-menopausal	42.0 (10.6)	45-54	48.2 (0.56)
Mid post-menopausal	42.2 (8.9)	55-64	49.3 (0.57)

Table 2 also includes comparable data with the 2021 Scottish Health Survey (9). Direct comparison should be undertaken with caution due to the different sampling methods, specifically that the current sample are not representative of the population but a self-selected group interested in this topic. It is evident that compared to the population norms for WEMWBS, the current sample had lower levels of mental well-being. Although WEMWBS is not intended as a screening tool for mental illness, there is an indication that a score of <41 is indicative of probable clinical depression,

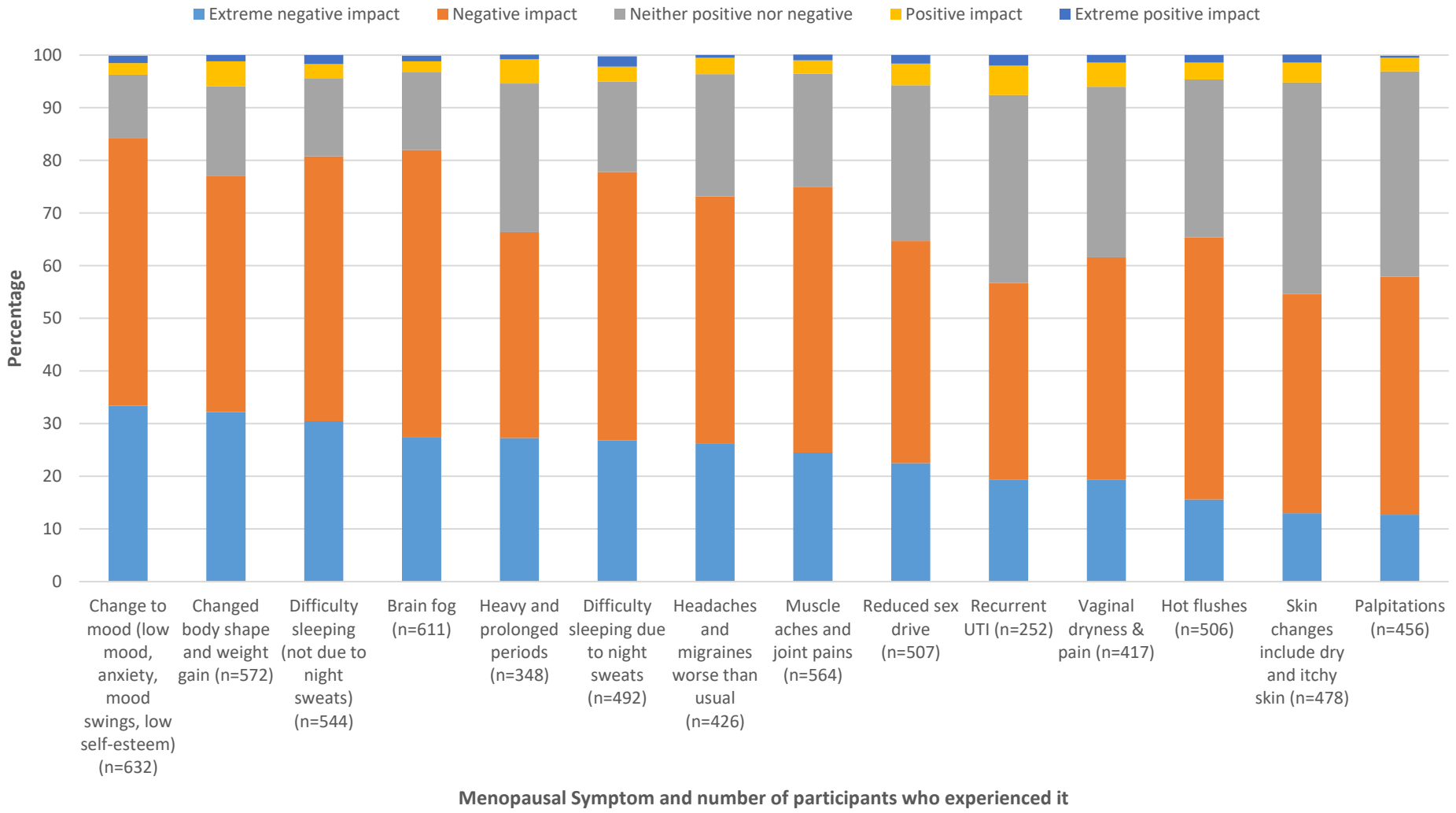
and a score between 41-44 is indicative of possible/mild depression(20). Furthermore, 37.4% of participants reported that they had been referred to, or received treatment from a professional (e.g., GP) for their mental health during the menopause life stage. These findings suggest that the sample were experiencing mental health problems.

Impact of menopausal symptoms on MWB

Participants were asked to indicate how their menopausal symptoms impacted their mental well-being. Figure 5 illustrates the extent to which each menopausal symptom either positively or negatively impacted on mental well-being. Not all women experienced each symptom, and those who responded 'not applicable' to any symptom were excluded from the analysis. The total number of participants included is shown beside each symptom.

It was evident that the common symptoms of menopause had an adverse effect on participants' mental well-being, with large percentages reporting either an 'extreme negative impact' or 'negative impact'. Specifically, for 11 out of the 14 symptoms, more than 60% of respondents indicated the symptom had a negative impact on their mental well-being. Changes to mood, difficulty sleeping (not due to night sweats), and brain fog had a negative impact for more than 80% of those who experienced the symptom.

Figure 5: Impact of menopausal symptoms on mental well-being



In addition to reporting participants' perceptions of the impact of menopausal symptoms on mental well-being, we examined whether experiencing each symptom was related to WEMWBS score. Table 3 compares the mean WEMWBS score for those experiencing each symptom with those who reported not experiencing each symptom[2]. Due to the cross-sectional nature of the data, conclusions cannot be made about the causal direction of the relationships (i.e., does mental well-being impact menopausal symptoms or does a menopausal symptom impact mental well-being?).

Assessing the importance of a difference in WEMWBS between two groups (i.e., those experiencing the symptom vs those who were not) is complex. We have identified where there is a statistically significant difference (threshold adjusted for multiple comparisons) and what the statistical meaningfulness of that difference is, using effect sizes. Additionally, it has been suggested that a *change* in WEMWBS of 3 or more points is likely to be recognisable by the respondent as important (20), so a difference of 3+ points may be of interest. These three considerations are all reflected in the text that follows.

Those experiencing changes to mood had a significantly lower WEMWBS score (-6.3) than those who did not, and this difference was classified as large. Additionally, those reporting reduced sex drive had significantly lower WEMWBS score (-2.9) compared to those not considerations experiencing the symptoms, and this difference was classified as small.

Notably, experiencing brain fog did not result in a significant difference compared to not experiencing brain fog, however this was a difference of -3.4 points and was classified as small moving towards 'medium' suggesting it may be important.

[2]Performed independent samples t-tests to compare the WEMWBS score between those experiencing the symptoms and those not experiencing the symptoms.. Taking into account the 74 statistical tests undertaken in the analysis for this project, the threshold for statistical significance is 0.05/74 (0.000675).

Table 3: Comparison of WEMWBS scores for those experiencing vs not experiencing each symptom

Symptom	Experiences symptom		Does not experience symptom		Mean difference	Cohen's d effect size[a]	p-value[b]
	n	Mean (SD)	n	Mean (SD)			
Changes to mood (low mood, anxiety, mood swings, low self-esteem)	588	40.7 (8.9)	37	47.0 (9.4)	-6.3	0.70	0.000*
Brain fog	559	40.8 (9.1)	66	44.2 (8.7)	-3.4	0.38	0.004
Changed body shape and weight gain	492	40.9 (9.0)	125	42.0 (9.2)	-1.2	0.13	0.202
Muscle aches and joint pains	483	40.7 (9.2)	135	42.6 (8.8)	-1.8	0.20	0.038
Reduced sex drive	462	40.4 (9.0)	153	43.4 (9.3)	-2.9	0.32	0.001*
Difficulty sleeping (not due to night sweats)	459	40.6 (9.1)	140	42.4 (8.9)	-1.7	0.19	0.048
Hot flushes	438	41.1 (9.4)	180	40.9 (8.5)	0.2	0.03	0.760
Skin changes	430	40.6 (9.2)	183	42.0 (9.0)	-1.4	0.15	0.087
Difficulty sleeping (due to night sweats)	394	41.4 (9.3)	224	40.6 (9.0)	0.9	0.10	0.254
Palpitations	389	40.3 (9.3)	228	42.1 (8.7)	-1.7	0.19	0.022
Headaches and migraines worse than usual	324	40.0 (9.3)	282	42.5 (8.7)	-2.5	0.27	0.001
Vaginal dryness and pain	318	40.5 (9.2)	289	41.7 (9.1)	-1.2	0.13	0.109
Heavy and prolonged periods	247	41.1 (9.3)	355	41.0 (8.9)	0.1	0.01	0.911
Recurrent UTI	140	40.8 (9.5)	455	41.0 (9.0)	-0.2	0.02	0.837

*[a]a rule of thumb for effect sizes is that <0.2=negligible; ≥0.2 =small; ≥0.5=medium; ≥0.8= large [b]p-values from independent samples two-sided t-test with equal variances assumed. * indicates statistical significance after adjusting for multiple comparisons.*

Physical activity behaviour in women experiencing the menopause life stage

Table 4 illustrates the participants' responses to the Scot-PASQ to assess whether participants met the current CMO recommended levels of moderate to vigorous physical activity (MVPA). Seventy-five percent of respondents reported achieving the 150 minutes of MVPA each week (either from 5 X 30 minutes or 150 minutes in total). Although the questions are not identical, comparison with the Scottish Health Survey data can provide an indication of the activity levels of the sample and these data are also shown in Table 4.

In this sample, 75% of participants reported achieving 150 minutes of MVPA per week. This percentage is similar to the data from the 2021 Scottish Health Survey where it was reported that 74% and 73% of women aged 35-44 and 45-54, respectively, met the CMO recommended levels of MVPA. This figure is high compared to the 61% of 55-64 years.

We created a question to assess the prevalence of muscle strengthening activity and 54% reported engaging in a form of physical activity that made their muscles feel tense, shake or warm on two or more times each week. The Scottish Health Survey reported on those who met the muscle recommendation only, and the figures were very low at 1% for 35-44 years, 3% for 45-54 years, and 2% for 55-64%. Forty-eight percent of participants achieved both the 150 minutes of MVPA *and* twice weekly strength training recommendations. This figure is higher than the data from the 2021 Scottish Health Survey data where it was reported that 40% and 34% of women aged 35-44 and 45-54, respectively, met the CMO recommended levels of MVPA and muscle strengthening recommendations.

Only 26% of participants reported taking part in a sport, indicating that 74% did not take part in sport. This figure is high compared with the 2021 Scottish Health Survey where it was reported that 34%, 42% and 54% of women aged 35-44, 45-54 and 55-64 years, respectively, did not participate in sport, equating to 66%, 58%, and 46% who *did* take part in sport (see Table 4). Figure 6 illustrates the types of sports that women reported taking part in using a word cloud where the size of the text represents the frequency of reporting.

Table 4: Participants' physical activity levels

Category	Yes n (%)	No n (%)	Scottish Health Survey 2021 results by age		
			34-44	45-54	55-64
Meet 150 mins MVPA recommendation (either 5 x 30 minutes or 150 minutes total)	491 (75%)	160 (25%)	74%	73%	61%
PA that makes muscles feel tension, shake or warm (2 or more per week) (muscle strengthening)	353 (54%)	300 (46%)	1%	3%	2%
Meet both 150 mins MVPA and muscle strengthening	312 (48%)	338 (52%)	40%	34%	28%
Participate in sport	170 (26%)	484 (74%)	66%	58%	46%

Figure 6: Word cloud of sports participants reported taking part in

In terms of changes in physical activity levels during the current menopause life stage, 16% reported that their levels had increased, 23% reported stayed the same, and 57% reported that their physical activity levels had decreased. Encouragingly, nearly three quarters (74%) of the participants indicated that they were interested in becoming more active.

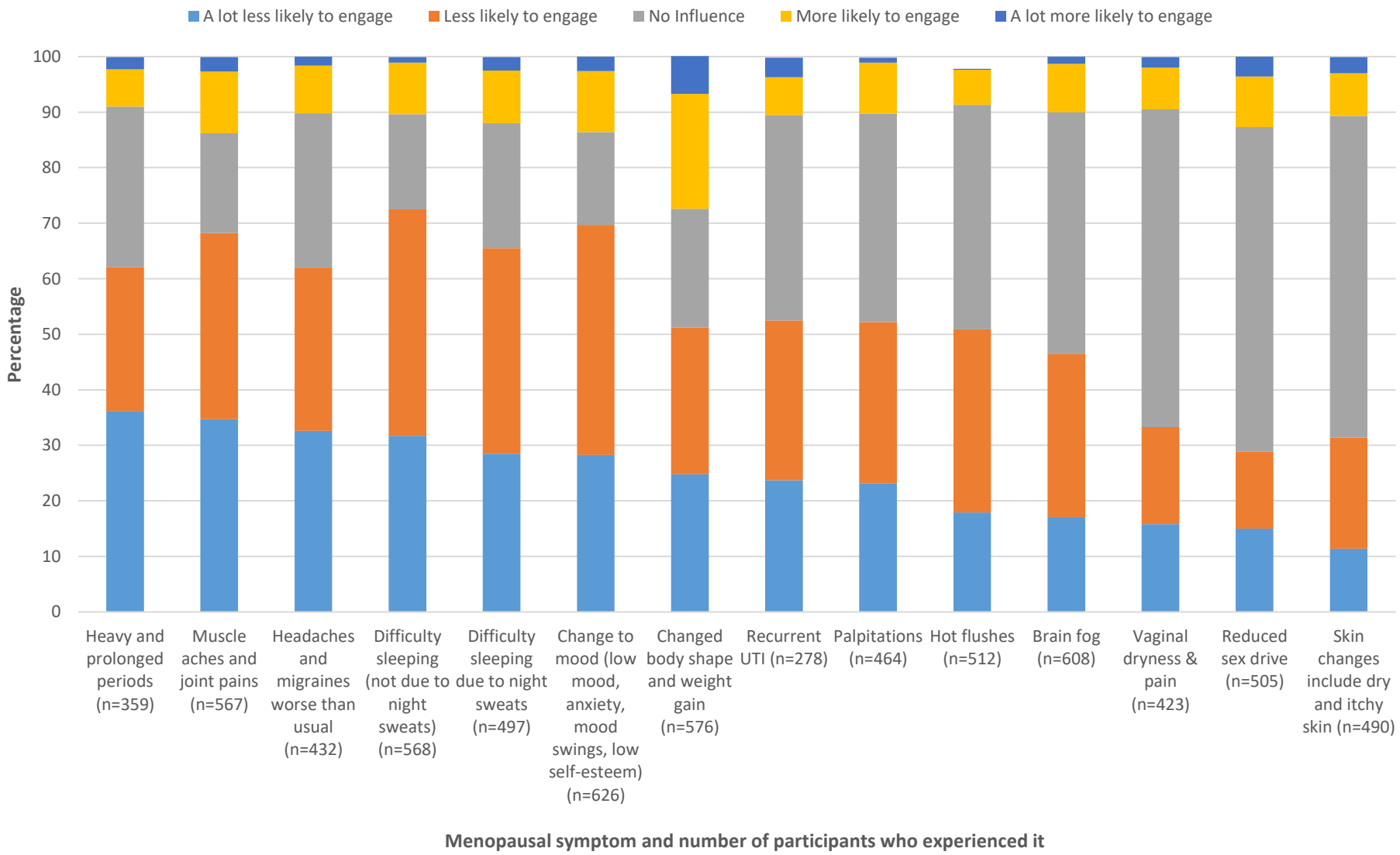
57% of participants reported that their PA levels decreased

Impact of menopausal symptoms on physical activity

Participants were asked to indicate the extent to which each menopausal symptom they experienced influenced their likelihood to be physically active. Not all women experienced each symptom, and those who responded 'not applicable' to any symptom were excluded from the analysis. The total number of participants included is shown beside each symptom. Figure 7 illustrates the extent to which each menopausal symptom either positively or negatively impacted on likelihood to engage in physical activity, with findings ordered from left to right by the highest proportion of 'a lot less likely to engage' responses to the lowest.

It was evident that the common symptoms of menopause had an adverse effect on participants' likelihood to engage in physical activity, with large percentages reporting either an extreme negative impact or negative impact. Specifically, for 10 out of the 14 symptoms, more than 50% of respondents indicated it had a negative impact on their likelihood to engage in physical activity. Changes to mood, difficulty sleeping (not due to night sweats), and muscle aches and joint pains had the most detrimental impact with around 70% of respondents indicated these symptoms resulted in them being a lot less likely or less likely to engage in physical activity.

Figure 7: Impact of menopausal symptoms on likelihood to engage in physical activity



In addition to reporting participants' perceptions of the impact of menopausal symptoms on physical activity, we examined whether experiencing each symptom was related to achieving the MVPA guidelines or not[3]. Table 5 illustrates a comparison between those who and did not experience each symptom on the proportion of participants who did or did not meet the MVPA guidelines. There were no statistical differences in the proportion meeting the MVPA guidelines amongst those that did and did not experiencing each symptom.

Nevertheless, of interest, the percentage of women meeting the guidelines was 8, 11, and 12 percentage points lower amongst those reporting headaches/migraines, difficult sleeping (not due to night sweats), and muscle aches/joint pains than those not reporting those symptoms, respectively; although this was not statistically significant when taking into account the number of comparisons tested in this analysis

Interestingly, those reporting difficulty sleeping due to night sweats were more likely to meet the guidelines than those not reporting this symptom (79% v 70%). Meanwhile those reporting difficulties sleeping not due to night sweats were less likely to meet the guidelines (73% to 83%). Neither were significant when we applied our stringent threshold to account for multiple comparisons meaning further work is needed to establish whether these differences do exist in the wider menopausal population.

[3] Performed Wald tests with two-sided significance thresholds to compare the proportion meeting the physical activity guidelines between those experiencing a symptom and those not. Taking into account the 74 statistical tests undertaken in the analysis for this project, the threshold for statistical significance is 0.05/74 (0.000675).

Table 5: Comparison between those experiencing or not experiencing each menopausal symptom on the proportion of participants meeting the MVPA guidelines

Symptom	Experiencing symptom		Not experiencing symptom		Difference in the proportion meeting MVPA guidelines between those experiencing symptom and not	p-value
	Meet MVPA guidelines, n (%)	Not meet MVPA guidelines, n (%)	Meet MVPA guidelines	Not meet MVPA guidelines		
Changes to mood (low mood, anxiety, mood swings, low self-esteem)	447 (74.9%)	150 (25.1%)	33 (82.5%)	7 (17.5%)	-7.6	0.279
Brain fog	423 (74.2%)	147 (25.8%)	57 (83.8%)	11 (16.2%)	-9.6	0.083
Changed body shape and weight gain	372 (74.0%)	131 (26.0%)	100 (78.7%)	27 (21.3%)	-4.8	0.266
Muscle aches and joint pains	356 (72.7%)	134 (27.3%)	118 (84.3%)	22 (15.7%)	-11.6	0.005
Reduced sex drive	352 (74.4%)	121 (25.6%)	122 (78.2%)	34 (21.8%)	-3.8	0.341
Difficulty sleeping (not due to night sweats)	340 (72.5%)	129 (27.5%)	118 (83.1%)	24 (16.9%)	-10.6	0.011
Hot flushes	333 (74.7%)	113 (25.3%)	140 (76.1%)	44 (23.9%)	-1.4	0.707
Skin changes	325 (73.5%)	117 (26.5%)	146 (78.9%)	39 (21.1%)	-5.4	0.155
Difficulty sleeping (due to night sweats)	317 (79.1%)	84 (20.9%)	160 (69.6%)	70 (30.4%)	9.5	0.008
Palpitations	297 (74.8%)	100 (25.2%)	178 (76.1%)	56 (23.9%)	-1.3	0.724
Vaginal dryiness and pain	245 (75.4%)	80 (24.6%)	223 (75.3%)	73 (24.7%)	0.0	0.989
Headaches and migraines worse than usual	239 (71.6%)	95 (28.4%)	228 (80.0%)	57 (20.0%)	-8.4	0.015
Heavy and prolonged periods	192 (75.0%)	64 (25.0%)	268 (74.4%)	92 (25.6%)	0.6	0.876
Recurrent UTI	115 (78.8%)	31 (21.2%)	341 (73.7%)	122 (26.3%)	5.1	0.214

Association between physical activity levels and mental well-being

The relationship between meeting physical activity guidelines (or not) and mental well-being was considered. As noted above, it is important to acknowledge that due to the cross-sectional nature of the data conclusions cannot be made about the causal direction of the relationships.

As illustrated in Table 6 those meeting strength recommendations, and those meeting both MVPA and strength guidelines had significantly greater score on the WEMWBS. These differences were greater than 3 points, which could indicate a recognisable difference for individuals (20). Additionally, for each of the physical activity behaviours there was a difference between the groups on WEMWBS score that could be classified as 'small' in size.

Table 6: Comparison of WEMWBS score for those meeting the recommended levels vs those not meeting the recommendation for different physical activity behaviours during the menopause life stage

Physical activity behaviour	**N**	**Mean WEMWBS score (SD)**	**Mean difference**	**Cohen's d[a]**	**p-value[b]**
Meet MVPA guidelines					
Yes	478	41.8 (8.7)			
No	157	39.0 (9.9)	2.8	0.31	0.001
Meet strength guidelines					
Yes	342	43.0 (9.5)			
No	293	39.0 (8.0)	4.0	0.45	0.000*
Meet both MVPA and strength guidelines					
Yes	303	42.8 (9.3)			
No	331	39.5 (8.6)	3.3	0.37	0.000*
Take part in sport					
Yes	161	42.7 (9.1)			
No	475	40.5 (9.0)	2.2	0.24	0.008

*[a]a rule of thumb for effect sizes is that <0.2=negligible; ≥0.2 =small; ≥0.5=medium; ≥0.8= large [b]p-values from independent samples two-sided t-test with equal variances assumed. * indicates statistical significance after adjusting for multiple comparisons.*

The association between menopausal symptom and mental well-being by physical activity level

In order to consider whether meeting the recommended MVPA levels influenced the relationship between menopausal symptom and mental well-being, we split the sample into groups including 1) those who experienced each symptom; and 2) those who did not experience each symptom. We then compared the WEMWBS score for those who met and those who did not meet the MVPA guidelines[4]. Tables 7 and 8 display these data.

For those who experienced the symptom, there was consistent evidence that those who met the MVPA recommendation scored higher on the WEMWBS than those who did not. The exception was those experiencing recurrent UTI, where there was evidence of a higher score for those who did not achieve the recommended level versus those who did.

However, the difference between the two groups was only statistically significant for the symptom of reduced sex drive. In addition to reduced sex drive, vaginal dryness and heavy/prolonged periods had a difference between groups that was ≥3 points. Additionally, these symptoms all had an effect size that suggested the difference was 'at least small', favouring those who met the guidelines.

For those who did not experience the symptoms, again there was consistent evidence that those who met the MVPA recommendation scored higher on the WEMWBS than those who did not. However, the difference between the two groups was only significantly different for recurrent UTIs (+3.6). For nine other symptoms, there was a difference of ≥3 points on the WEMWBS between those who met and those who did not meet the MVPA recommendation, and for each of these the difference would be classified as 'at least small' (and large in the case of brain fog), favouring those who met the guidelines.

[4] Performed Independent samples two-sided t-tests with equal variance assumed to compare the mean WEMWBS scores between those meeting and not meeting the MVPA guidelines, first for those experiencing the symptom and secondly for those not experiencing the symptom. Taking into account the 74 statistical tests undertaken in the analysis for the project, the threshold for statistical significance is 0.05/74 (0.000675).

Table 7: Comparison of WEMWBS score by whether meet or do not meet MVPA guidelines for participants experiencing each menopausal symptom

Symptom	**Experiences symptom**						
	Meet MVPA guidelines		Not meet MVPA guidelines		Mean difference	Cohen's d[a]	p-value[b]
	n	mean (SD)	n	mean (SD)			
Changes in mood	447	41.3 (0.4)	150	38.9 (0.7)	2.4	0.28	0.004
Brain fog	423	41.3 (0.4)	147	39.0 (0.7)	2.3	0.26	0.008
Changes shape or body weight	372	41.6 (0.5)	131	38.8 (0.8)	2.8	0.31	0.002
Muscle aches and joint pains	356	41.4 (0.5)	134	38.7 (0.8)	2.7	0.30	0.004
Reduced sex drive	352	41.3 (0.5)	121	38.0 (0.8)	3.3	0.37	0.001*
Difficulty sleeping not due to night sweats	340	41.3 (0.5)	129	38.9 (0.8)	2.4	0.27	0.011
Hot flushes	333	41.7 (0.5)	113	39.3 (0.9)	2.5	0.26	0.017
Skin changes	325	41.2 (0.5)	117	39.1 (0.8)	2.0	0.22	0.043
Difficulty sleeping due to night sweats	317	42.0 (0.5)	84	39.2 (1.0)	2.7	0.30	0.017
Palpitations	297	40.9 (0.5)	100	38.7 (0.9)	2.2	0.24	0.038
Vaginal dryness	245	41.4 (0.6)	80	37.6 (1.0)	3.9	0.43	0.001
Headaches and migraines	239	40.3 (0.6)	95	39.1 (0.9)	1.2	0.13	0.293
Recurrent UTI	115	40.6 (0.9)	31	41.4 (1.7)	-0.8	0.09	0.675
Heavy or prolonged periods	192	41.9 (0.7)	64	38.6 (1.1)	3.3	0.36	0.014

*[a]a rule of thumb for effect sizes is that <0.2=negligible; ≥0.2 =small; ≥0.5=medium; ≥0.8= large [b]p-values from independent samples two-sided t-test with equal variances assumed. * indicates statistical significance after adjusting for multiple comparisons.*

Table 8: Comparison of WEMWBS score by whether meet or do not meet MVPA guidelines for participants **not** experiencing each menopausal symptom

Symptom	Does not experience symptom						
	Meet MVPA guidelines		Not meet MVPA guidelines		Mean difference	Cohen's d[a]	p-value[b]
	n	mean (SD)	n	mean (SD)			
Changes in mood	33	47.7 (1.6)	7	44.3 (3.4)	3.4	0.36	0.397
Brain fog	57	45.2 (1.2)	11	39.0 (2.7)	6.2	0.74	0.029
Changes shape or body weight	100	42.6 (0.9)	27	40.1 (1.7)	2.5	0.27	0.211
Muscle aches and joint pains	118	42.8 (0.8)	22	41.4 (2.0)	1.4	0.16	0.508
Reduced sex drive	122	43.6 (0.8)	34	42.3 (1.6)	1.3	0.14	0.466
Difficulty sleeping not due to night sweats	118	43.1 (0.8)	24	39.0 (1.8)	4.0	0.46	0.043
Hot flushes	140	41.8 (0.8)	44	38.2 (1.4)	3.6	0.43	0.015
Skin changes	146	42.9 (0.8)	39	38.6 (1.4)	4.3	0.49	0.008
Difficulty sleeping due to night sweats	160	41.5 (0.7)	70	38.4 (1.1)	3.1	0.35	0.015
Palpitations	178	42.9 (0.7)	56	39.6 (1.2)	3.2	0.38	0.016
Vaginal dryness	223	42.1 (0.6)	73	40.6 (1.1)	1.5	0.16	0.240
Headaches and migraines	228	43.2 (0.6)	57	39.6 (1.2)	3.6	0.42	0.005
Recurrent UTI	341	41.9 (0.5)	122	38.3 (0.8)	3.6	0.40	0.000*
Heavy or prolonged periods	268	41.6 (0.6)	92	39.2 (0.9)	2.4	0.27	0.030

*[a]a rule of thumb for effect sizes is that <0.2=negligible; ≥0.2 =small; ≥0.5=medium; ≥0.8= large [b]p-values from independent samples two-sided t-test with equal variances assumed. * indicates statistical significance after adjusting for multiple comparisons*

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Part 2: Focus Group Findings – Understanding women's experiences of being physically active during the Menopause life stage.

Data collection

Focus groups took place via MS Teams and were facilitated by three researchers (AN, JR, CF). The discussion was structured around four broad questions:

- **What helps AND what hinders you to be physically active during the menopause life stage?**
  - Any physical factors?
  - What about how you are thinking or feeling?
  - How are your motivation levels?
  - Are there opportunities available?
  - What about other people around you?

- **How does/did being physically active influence your mental well-being during the menopause life stage?**

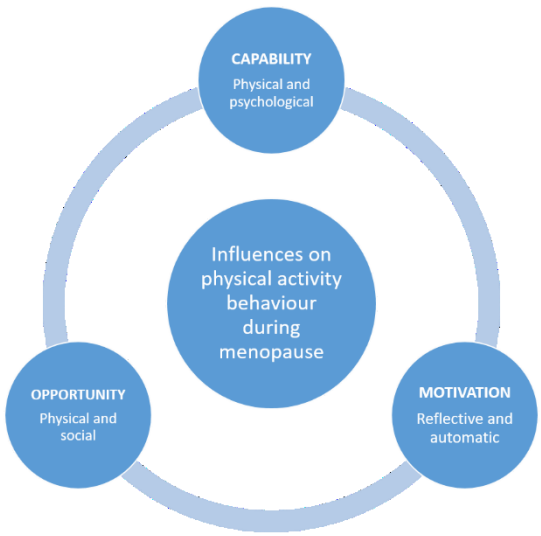
- **What could we do better/differently to support women experiencing the menopause to be physically active?**

All focus groups were recorded and the MS Teams automated transcribing function was used to generate a transcript for each focus groups. Although all transcripts were reviewed for accuracy, due to the automated generation there may be some inaccuracies in the flow of speech transcribed by MS Teams

Analysis

The COM-B model (21) provides a useful framework for understanding the factors that influence behaviour. The COM-B model highlights that behaviour is influenced by **C**apability (physical and psychological), **O**pportunity (social and physical), and **M**otivation (reflective and automatic). This COM-B framework was used to identify and organise the main themes to better understand the influences on physical activity behaviour during the menopause (Figure 8).

Figure 8: Understanding physical activity behaviour during the menopause using the COM-B model



Additionally, we grouped the participants' recommendations as to how we could do better/differently to support women experiencing the menopause life stage to be physically active.

Participants

Four focus groups took place in October 2022, with 24 participants in total. Tables 9 details the composition of each focus group in terms of the number of participants, average age, and menopausal status of participants. Overall, the

average age was 52.6 years and there was a total of 12 peri-menopausal, 4 early post-menopause and 8 mid-post menopause participants.

Table 9: Participants in focus groups

Focus Group	Number of participants				Mean age
	Total	Peri-menopausal	Early post-menopausal	Mid post-menopausal	
1	5	2	1	2	53.0
2	7	3	1	3	51.7
3	5	1	2	2	54.0
4	7	6	0	1	52.4
Total	24	12	4	8	52.6

Table 10 details the demographic characteristics of the participants. All participants were white with a gender identity that matched their assigned sex at birth. All participants provided their postcode, which enabled us to classify their socio-economic status based on the Scottish Index of Multiple Deprivation (SIMD). There was a spread of socio-economic status across five SIMD groupings, but like the questionnaire data there was a skew towards the areas of least deprivation with more than 50% of participants in the two areas of lowest deprivation.

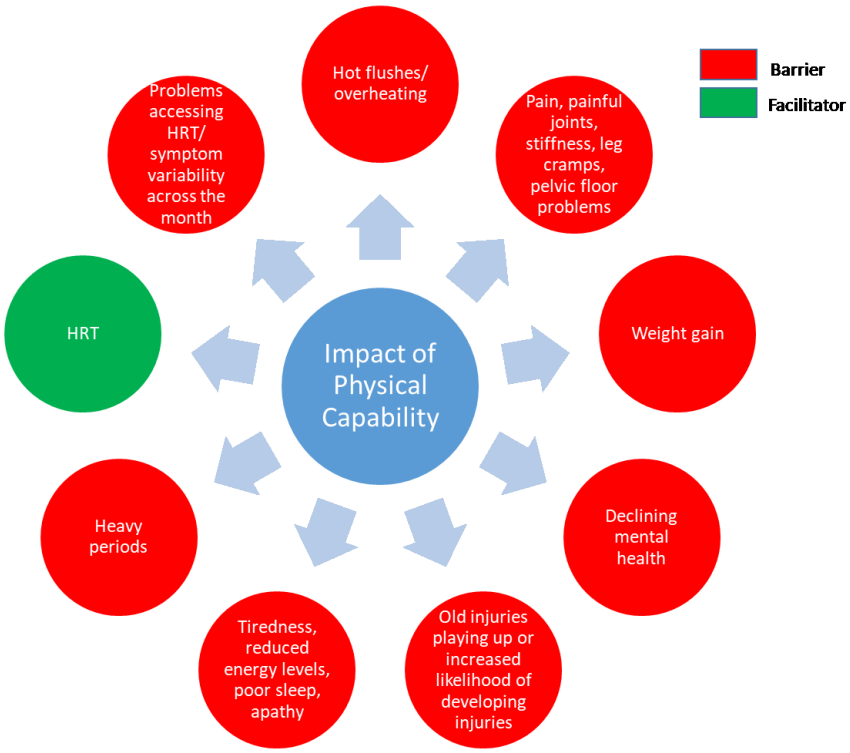
Table 10: Demographic characteristics of focus group participants

Demographic Characteristic	Number	Percentage
Ethnicity		
White	24	100
Asian, Scottish Asian, British Asian	0	0
African, Scottish African British African	0	0
Caribbean or Black	0	0
Gender identity - matches sex assigned at birth		
Yes	24	100
No	0	0
Prefer not to say	0	0
SIMD quintiles		
1 most deprived	2	8
2	5	20
3	4	16
4	6	25
5 least deprived	7	29

The impact of physical and psychological capability on physical activity

Participants discussed how their capability impacted their ability to be physically active. Figure 9 illustrates which factors helped (green), and which factors hindered (red) participation in physical activity.

Figure 9: Factors relating to capability that helped and hindered physical activity participation



It was evident that the dominant facilitating theme related to how having access to HRT helped/had helped participants to manage symptoms of menopause, and therefore to increase physical activity levels.

> *I was bed bound and a complete basket case and I never thought I would run around the block again and I found really getting my HRT balanced and it did get better*

Consistent with the questionnaire findings, many participants spoke in detail about a wide range of menopause symptoms and how these had negatively impacted physical capability to be active. These specific themes are outlined above in Figure 9 and include both physical capacity and psychological capacity (i.e., declining mental health).

> *For me, I put on a lot of weight. I've always fluctuated and wait, but I put on a lot of weight about the same time. And it just became this huge thing for me.*

> *And one of the things I was doing that was really helpful to me was like 15 minutes of yoga just before bedtime. And that was really helping me sleep. And now I'm just going, oh, I'm too tired. Just gonna go to bed because I can't keep my eyes open and then you don't sleep well and then you're tired and you know, sometimes I just feel like I need to just. Force myself to do it because I know it works, but the bed is so. Tempting, yeah. And then I see, you know, ####### just coming in there as well to say and then, you know, following on, if you don't have a good night's sleep, then tiredness the next morning as well and is often an issue.*

I used to go swimming three times a week, but then during perimenopause that irregularity and then they are absolute Am brutal mess of heavy periods. I mean, two weeks of constant heavy, heavy bleeding. I didn't know when my period was coming on. I didn't know what it would be like when it did and over about a year that swimming actually stopped because it just you couldn't go three times a week because you just never knew what situation would you would be in.

There was also discussion around how physical capability could vary and this was clearly linked to mental well-being. Some participants were cautious about overdoing it, aware they might feel good at the time but it could make things worse in the long run.

You know, being active does help my mental health, but if my mental health is very bad and I'm not sleeping, that is absolutely exhausting. And if you then try and push your body, you can do more harm than good. So it's known. When to try and exercise and when to not do it because you're gonna make things worse.

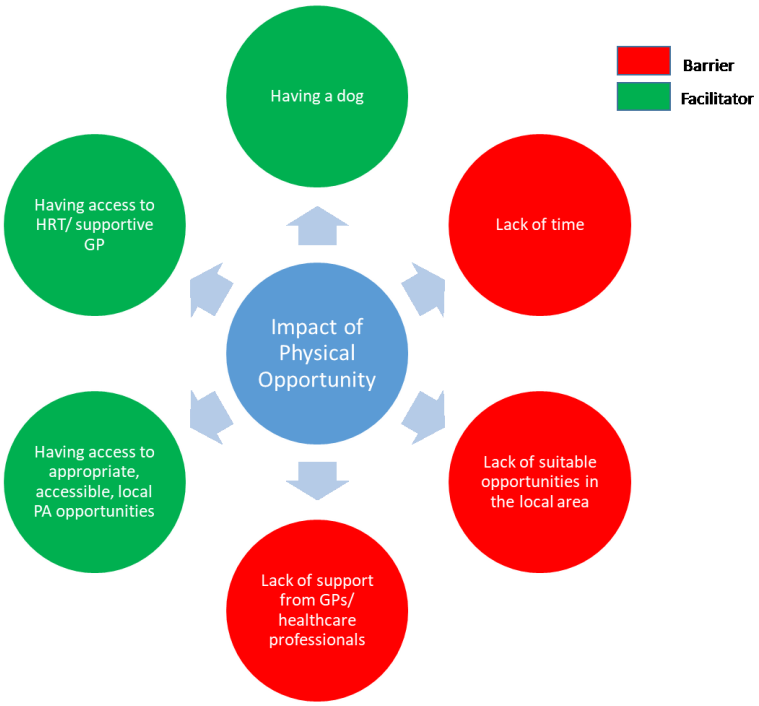
Many participants spoke about how changes in their mental health during the MLS had made it harder for them to be active. Low mood, feelings of being overwhelmed, feelings of stress, anxiety, negative thoughts or more general discussion around mental health were mentioned, along with feelings of brain fog (*'so like my brain doesn't function'*). Anxiety was frequently mentioned, either as a new phenomenon that had developed as a menopause symptom or an exacerbation of existing anxiety symptoms.

And I looked over and just like Oh my God, this is menopause, this this isn't real. This is actually menopause anxiety. And then I started to see it as its own entity that suddenly I would get really anxious about things that had never crossed my mind to get anxious about before, and one of those things was perhaps going into situations with other people going into exercise situations, going out and walk, and some people have already talked about looking like all you're overweight or you're huffing and puffing or and I think it's easy once that anxiety it's present to then allow it to start talking to you and start allowing you and it and then I go for a period. I did have to kind of really bring myself back because I was letting myself off the hook, let myself off the hook homogeneous. You need to deal with this anxiety. Don't push yourself. You know, just allow yourself to to be in this moment and and let the anxiety pass.

The impact of physical and social opportunities on physical activity

Figure 10 illustrates the impact of factors that were classified as 'physical opportunities' on physical activity behaviour with both barriers (red) and facilitators (green) identified.

Figure 10: Factors relating to physical opportunity that helped and hindered physical activity participation



Participants spoke about having opportunities to be active that were "really close" or easy to access supported them to be active during the MLS. This could include online opportunities, local gym classes, Jog Scotland groups, walking group with friends etc. Some participants also mentioned they lived in a supportive environment e.g. near woodlands, enjoyed being outside in their garden or the importance of benches to rest when out for a walk.

> *I'm tired, but I think gardening really been my saviour. You know, just getting outside and spending time outside and. And as you can see, I've got quite a big garden, so it sort of keeps that side and getting out for walks and things as well.*

Some participants though highlighted a lack of exercise classes in their local area that were appropriate/suitable during the menopause.

> *Woman, let's face it, 51% of the population experiences menopause of some kind. Yet there's no gyms, no classes, no Particular activities that are Tailored to the needs of menopausal perimenopausal or postmenopausal women, and I do find that frustrating.*

Being able access a supportive GP/healthcare team and having the opportunity to try HRT was mentioned as a factor that helped people to stay active. In some instances, participants found it more challenging to access support from their GP/healthcare team around the topic of menopause or accessing HRT, with a sense in some cases there was room for improvement. Linked to this was a

lack of knowledge on what would happen during the menopause and knowing when to access support from healthcare professionals (lack of adequate knowledgeable support from healthcare professionals to guide women through the MLS).

> *Yeah. So I am, Peri menopausal. And again, obviously this is more about physical exercise, but reiterate what everybody's saying about having problems with getting HRT. And from a GP it's taken over 8 months and it's still not settled. And that in itself is a problem as well because the I seem to be OK for the two weeks that I'm on estrogen. But then the two weeks I'm on the progesterone patch that's not agreeing with me. So those two weeks it's just like, Nope, I'm not doing anything.*

> *Yes, I I think knowing a lot had they known earlier, I would have probably started HRT a lot earlier and I would have been able like my my mental health symptoms, I can manage a lot better now that I know what it is because whereas previously I genuinely just thought I was losing my mind and it was like Oh my God, I'm going to a genuinely thought I was going to end up getting committed to a hospital. I was like, what the heck is going on? But now I know I can have that conversation with myself. So it's like, you know Why you're feeling like this? It will pass. Don't worry about it. And again, you. Yeah, with the physical symptoms as well. Had I known that all of these different things all add up to menopause, then I would have been to see my GP a lot quicker. And especially had I known that I would have been fighting for over a year to actually get them to take me seriously and prescribe me HRT.*

For some participants finding time to be active at this stage in their lives was challenging due to caring for other people or juggling other responsibilities. Participants were aware of the benefits of being active but in some cases struggled to make time/prioritise themselves.

> *And the first thing really it was that the kids came first. The house came first work, and then if I if I had enough energy left, then activity. But to be honest, I found that really quite tricky.*

Many of the participants spoke about how having a dog provided an opportunity to be active and including a walk/walks into their day was something that had to be done to exercise the dog.

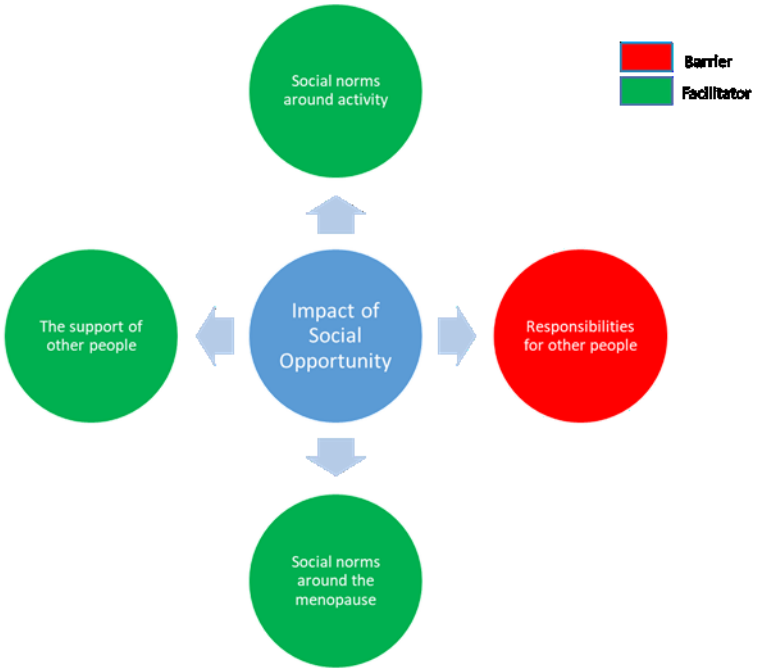
> *And the main thing that I did do, I've got a dog. So my dog is a rescue. We don't know our history, but Likes to go out four times a day and um Oh my God. And she hunts. So I'm around and I could be out in the morning. I'm out for 40 minutes before I start work, which has been really good actually for. Get moving forward and amount of lunch and about every time. And then he does the evening walk. So hey, but I have to say that's really helped because we run up the field sometimes and then I wouldn't have run last year.*

There was also a broader theme emerging from the data, not specific to PA, but exploring wider issues around frustration at the support available during the MLS. For example, one participant mentioned the lack of support in their workplace for a menopause policy.

> *You know I tried to get a a menopause policy into our organization eight years ago and it became a sentence in another policy because the mostly male board at that time just couldn't see that it was anything that needed to be in there. And I sit on a board with another organization and they've just ratified menopause policy and action plan for the organization on the back of some stuff that I'd sent through about 3-4 months ago. And I and and hopefully my organization will adopt it soon too. And that's the massive shift in a very short period of time.*

Figure 11 illustrates the impact of factors that were classified as 'social opportunities' on physical activity behaviour with both barriers (red) and facilitators (green) identified.

Figure 11: Factors relating to social opportunity that helped and hindered physical activity participation



Participants spoke about how the support of other people helped them to stay active during the MLS. This could be support from partners, family or friends. Some participants also used online forums to connect with others who were experiencing the MLS (although it is not clear if this provided support to be active).

In relation to physical activity, making plans with other people was perceived as an important way to ensure an activity happened. This could be short-term plans, for example to meet a friend for a walk or a swim, or longer-term goal setting, such as training towards climbing a mountain together. Participants also spoke about how it helped to connect with similar, like-minded people – the social connectedness from being active with others was important. The support of other people could be quite practically orientated (e.g. organizing to do something with another person) or more psychologically orientated with the opportunity to socially connect, discuss their lives, including the menopause or providing support and encouragement to be active.

> *I would say a friend. Just having someone saying on Monday, we're going to meet and we're gonna do X. And sometimes you then are forced to do otherwise life takes over and you think ohh. I've got so much to do and I, you know I can't take that time out. But the fact you've made a commitment to someone forces you to do it.*

> *And I suppose for me as well, when I am physically active, I sleep better. And you know, especially if I get out in the morning or during the day, it definitely has an impact on my sleep. But I also think what I miss most is the social interaction with others. You know, if there's classes or when there were things on that I felt I was able to go to and you felt better for being amongst others as well. And so, you know, it was good for me socially.*

Some participants though mentioned caring responsibilities limited their ability to be active during the MLS (similar to lack of time in physical opportunities).

> *And I suppose one of the other thing that made hinder women even managing some time for themselves is maybe the life stage that they experience the menopause at you know some of them in their 40s still have quite young children or you have teenagers and then you have aging parents. And you think you know, you just get your teenagers independent, but then you're looking after aging parents as well and working full time and doing the whole, having it all thing. But probably thinking that you're doing it quite badly and everybody else is doing it way better than you That's a difficult time as well I think.*

For some participants there were clearly social norms around activity that continued into the MLS. One participant spoke about how as a family they had always gone for a walk every day and this had continued as a habit.

> *I feel like if I don't get out for a walk. My whole family like this, all the women in my family, like we have to be walked once a day, like we're dogs otherwise. I mean, we sit there at Christmas and and then it'll be like, right? We need to go for our walk, um. But so I think probably I would, but I wouldn't be getting as much. I wouldn't. I wouldn't have gone out and did. An hour and a half. Of getting sweaty. I would have gone for a nice. I would have gone for a 20 minute walk. Yeah. And I don't know that that's changed particularly. It's hard to tell because. You know, I I've been riding my bike for transport for for so long, it hasn't really, it's difficult to see any, any real change. It's a good habit to have to go walking.*

Similarly, participants discussed the wider context around menopause, with a general perception that social norms around menopause are shifting with menopause discussed more openly. These discussions weren't specific to physical activity. Some people mentioned the role Davina McCall's book had played in this process. Examples of support that were offered through workplaces were mentioned including menopause cafés or environmental modifications e.g. desk fans (not clear if these support/encourage PA).

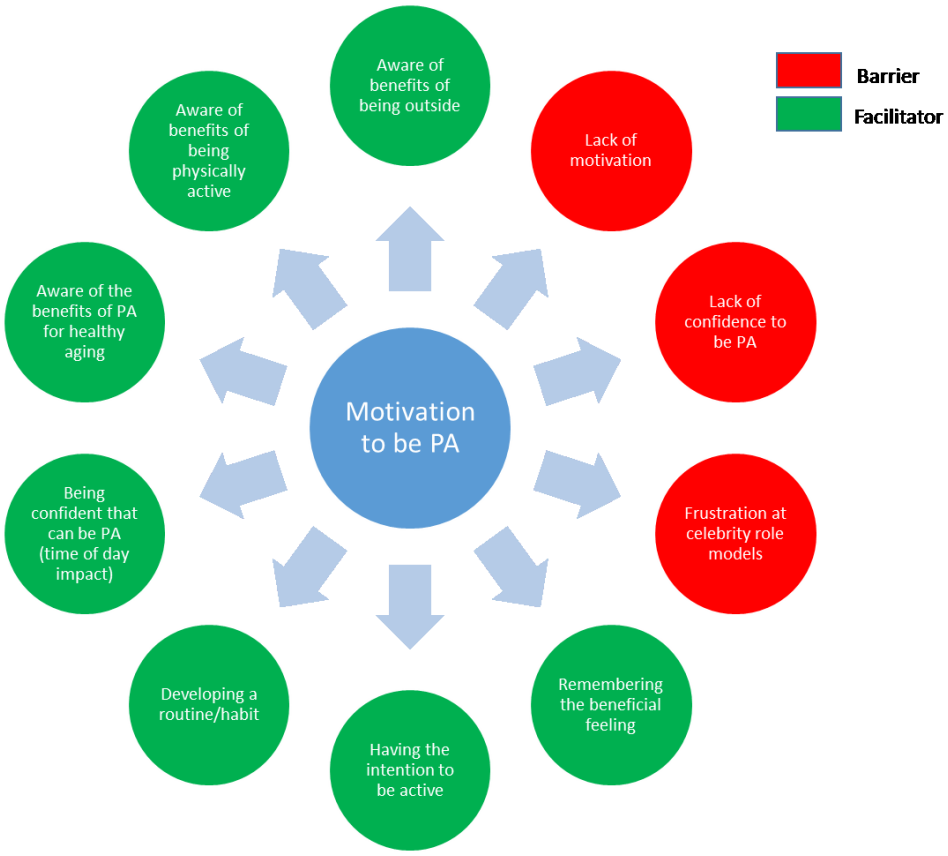
> *I think for me, just in terms of the timescale, I mean by the sounds of things, you're all maybe 5-8 years behind maybe where I was and menopause just wasn't talked about, you know and it was just a taboo subject. So this is where I get upset but But it's certainly. It wasn't accepted. It wasn't something that you could have that conversation about, and I think that's. The massive difference I've seen in the last 5-6 years, particularly the last three years.*

> *...they've set up a menopause cafe at my work. So there's quite a few of us having a chat now. And she said she she didn't realize it was a menopause initially, but once, you know, and you learn to manage it a bit better. So I manage where I walk and where I want to walk. Now, I think the what the menopause is giving me in a really positive way And it might hinder what I do, but it allows me to figure out what I want and be vocal about it and tell people what I want in a positive sense rather than I have been a probably a bit of it. Ohhh yeah alright and then probably not wanted to do it in the past but now I can go. Do you know? No, I don't enjoy that. I'm not gonna do it. So I find things that I like doing there. So that's a positive for me.*

The impact of motivation on physical activity

Figure 12 illustrates the impact of factors that were classified as 'reflective or automatic motivation' on physical activity behaviour with both barriers (red) and facilitators (green) identified.

Figure 12: Factors relating to motivation that helped and hindered physical activity participation



Overall there was an awareness in the sample that motivation to be active had changed as a result of the MLS, with an awareness that a drop in motivation to be active was potentially a problem. Some discussed how motivation to be active had declined due to a fall in energy levels/tiredness, with challenges of caring responsibilities, work and home life depleting energy levels. Fluctuations in energy levels at different times of the month were also a factor affecting motivation to be active, as was a general lack of enthusiasm/flattening of mood. Managing energy levels was also a factor with an active day influencing energy levels the next day. One participant specifically mentioned apathy. One participant discussed how they felt the MLS really affects your ability to motivate yourself, with the perception this might be because of a feeling of loss of control of what is happening to their body.

> *The sort of compound effect of all those things. I think it really, really affects your motivation as well. And I think the big thing for me I don't know, somebody once said to me was the hardest step is going over the front door and for me, that was like a real trigger because actually once you commit to going out, you're out. Now. I don't think it matters. You have to fight. You definitely have to find something that works for you, I think. And I think for all of us, that's all something different. But there is something that I think menopause really affects your ability to motivate yourself in a way you once did. And I said that I don't know whether it's because you don't feel in control of your body anymore. Whereas when I was in younger, I felt it quite in control of my body. But with menopause, I didn't feel in control of my body.*

Many of the participants were aware though that being physically active made them feel better and eased psychological symptoms of the menopause such as low mood, anxiety or stress. Some participants were conscious of the ageing process and not getting any younger, which encouraged them to stay active.

> *That's if it wasn't for exercise, I would just be destroyed by processes including menopause that have gone on in the last few years. And so yeah, it's just absolutely vital to reduce my anxiety, increase my well-being, and I feel so much better and more motivated after doing any sort of exercise. Like ###### said, it could be a good brisk walk or or it could be something more vigorous. I just have to have that in my life. And I couldn't do it for a few weeks because of COVID. And that's been pretty awful. Ohh, just yeah, I just feel so lucky.*

> *Yeah. I think for me a bit less fun, but it was the kind of sense that it was like, use it or lose it. You know, it's like I'm not gonna get any younger. It's not gonna get any easier. And my health only gonna go down if I don't keep it up. So, it was more like get out now and maintain health*

Similarly, some participants talked about the importance of keeping active to them and doing activities they enjoyed, with a determination to keep doing these activities and to plan time to do them. For some, motivation was boosted by having a goal and something to train for, giving them a focus to stay active and intention to keep going.

> *I'm netballs really important for my mental health. Being part of a team, being part of a group of women. Where everybody's got your back, so to speak. And I guess the determination to. Not not be able to play anymore and sort of Direct me to my GP, who was very supportive and it's been like a miracle. Umm, the pain has more or less gone. I'm able to play again and so that yeah, that has been really*

> *And I have to like when the other person was saying, like I did the kilt lock and the moonwalk, but I had to do, I had to set that as a target to do it or I would never have done it.*

Some participants spoke about how being active was just something they had always done and was part of their life. Others mentioned having a regular routine, often involving walking. One participant mentioned how routine was particularly helpful in the darker winter months to help stay motivated. Walking the dog was mentioned as a form of activity that was habitual and had to be done regardless of how you felt. Physical activity as a form of transport was also mentioned in this context, either commuting (walking or cycling) or more generally where car transport wasn't an option. One participant mentioned how cycling was their main form of transport and this encouraged/forced them to do physical activity even if they felt there were times they wouldn't otherwise have bothered.

> *Some days you just wanted to stay inside with a cup of tea and a great biscuit and cry a little bit. But having the dog, you know the dog had to get out. At least I had that, you know. But if I think if I didn't have my dog, I'd have been like, no, I'm not gonna not doing it*

Many participants spoke about the importance of the outdoors and an awareness that being outside made them feel better.

I like being outside. That helps. The mood helps to kind of boost the energy because you're outside and you're in the sun, or at least in daylight. So that's that's. The way around it for me, but I can definitely looking back, see the change and I put that down to the change in hormones.

Just even getting outside and getting have a bit of head space I think is the most important thing for me, even when the IT was dragging myself outside, I always knew it would be better once I once I came back and I would always regret it if I hadn't done it And so just having that even just some time to yourself or if your day.

Participants spoke about the positive affects being active had on their mental well-being and how they wanted to use this to motivate themselves to be active again, with an awareness that you regret not doing something and don't regret it when you do an activity. There was a sense of confusion in some participants why motivating yourself to be active was so challenging when you get such clear benefits from it.

Um, but I do know that when I have went for a swim or I have been for a walk, I do feel really good, really good. But then I forget that I felt really good when I did that, and then I don't do it. And again, it's that kind of. You know, feeling bad about why does it not go for a swim?

Time of day was mentioned as influencing motivation with individual variability in preferred times (early mornings, straight after work, avoid early mornings).

But I mean things like, I used to love running in the mornings, but now I can't even be bothered to get myself out of bed before 9:00 o'clock. Do you know what I mean? I so I don't know if it's part of symptoms of, you know, perimenopause or whether it's I I don't know

Motivation was also influenced by participant beliefs about their capabilities with some participants aware they had low confidence in relation to physical activity that was present before the MLS and was an ongoing issue. The sensation of effort and feelings of discomfort, along with feeling self-conscious seemed to suppress motivation and self-confidence. Some participants spoke about weight gain and how they didn't want to exercise if others could see them.

Umm, I'm actually dreadful with physical activity. Umm, I always have been. I think because of Partially because of my weight. I'm I'm convinced that people are kind of, you know, I did try talking and with the with the a club and but I kept saying to my husband, I'm convinced when I run past people, they go look at that fat cow, look how much she's sweating and stuff like that. So I've got absolutely no confidence exercise wise, never have as a child

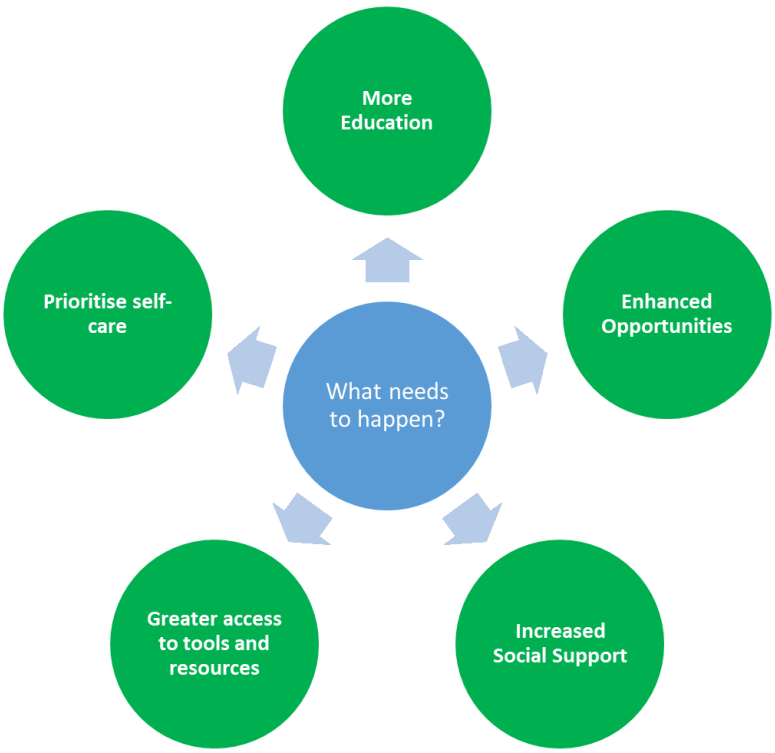
There was a sense of frustration expressed by one participant around celebrity role models and their role in the MLS around physical activity.

Sometimes I find it frustrating. Because you see, you know, some of the celebrity menopause superstars doing these amazing workouts and managing to do all this stuff and you think how come they can still manage to do? All that sport and and I I can't. But on the other hand, I kind of think you know, you've gotta listen to your own body and what your body is capable and and mine at the moment isn't capable of that. And maybe when I squirt out the other end, then that can become Just like them. But the minute I can't.

What could be done better or differently to support women to be active during the menopause life stage?

Participants were also asked to identify how we could better support women to be physically active during the menopause life stage. Figure 13 summarises the main points made clustered around the themes of more education, enhanced opportunities, increased social support, greater access to tools and resources, and encouraging women to prioritize self-care.

Figure 13: Suggestions as to how to better support women during MLS to be active



More education

Awareness raising around the topic of menopause

Participants were aware attitudes towards menopause had changed considerably in recent years, but there was still considerable room for improvement to remove stigma around talking about menopause. Examples of good practice in recent years in normalizing discussion about health topics were mentioned, for example breast cancer awareness. Increased awareness of the symptoms that could be attributed to menopause was discussed, with an emphasis on making sure this wasn't just specific to menopausal women but also available to younger women/men/partners/family members. The Women's Health plan was discussed as a useful resource but with an awareness that it had to come with additional resources to ensure the focus isn't lost.

So I don't think there's been anything else that I can think of for a very long time that the attitudes have shifted so quickly. In the last three to five years on on a a big public health But other than COVID and us all winning masks, but you know you, it's it has just shifted so far But it's still got a long way to go and and we need to keep talking about it and we need to make sure people are aware of it and and make sure they that the information is is there and and whether that's the poster on the back of a Liu door that says menopause.

More education for Health Professionals on the menopause and HRT, women during the MLS, and exercise professionals on the topic of menopause

Support from health professionals such as GPs, was mixed with some participants feeling more training for health professionals was needed to help women manage their symptoms. This should include an awareness of menopause specific lifestyle options.

> *First of all, doctors need menopause training. Am I spoke to my doctor and she's had absolutely no menopause training whatsoever and you're only and by the time you the GP you've been in training for 10 years Unless you're motivated to do menopause training, there is no menopause training for doctors, which I think is absolutely shocking, And I think it's like a huge, huge oversight.*

The variability in support available through GPs was an interesting dimension to the discussion, with some highlighting very positive experiences. Ideally health professionals should all be educated on the topic of menopause and able to provide consistent support to all women. Providing education opportunities for women during the MLS was mentioned by one participant specifically in relation to how to manage the mental health symptoms of the MLS, hopefully helping to get people out of the house.

> *I suppose thinking just some of the other bodies that we spoke a lot about our anxiety and our low mood as well. I think that's such a barrier for people even sort of getting out like their food over the door. Sometimes when you start to doubt yourself about everything and and the person you were and you don't recognize the person you are at the time and I work with a lot of ladies in my age group and it's a really common theme that we hear. And so I think some targeted work on that. It would be really, really helpful.*

Having exercise professionals trained in looking after menopausal women was also suggested. This might help to offer menopause specific exercise opportunities or to enable modification of existing opportunities.

> *But from the physical activity side, what I think would be absolutely great is if some of the, if the the personal trainers were coached on how to look after menopausal women. And specialists at at physical trainers who could could help menopausal woman. I think that would be a tremendous thing*

More education – menopause specific physical activity/exercise information

There was a request to get the message out there about how being active during menopause can improve your menopause journey. More information and role models specifically in relation to strength training were mentioned, along with guidance on osteoporosis and the role exercise can play. Examples of good practice in relation to menopause specific exercise opportunities were highlighted including Jog Scotland menopause friendly groups. The importance of having a good exercise routine in place prior to the menopause was mentioned.

> *I think peer support, I think generally from a public health point of view, you've got to have messages out there to women saying get a routine in place from 35. 40 Now I understand that's difficult with children caring responsibilities, parents, all of the rest of it. But Nicola Sturgeon really needs to be getting the message out there because people are completely dropping off. And I'm hearing from people that they just can't get into exercise because they don't have that base.*

Prioritise self care

There was some discussion of the importance of delivering information on menopause and exercise sensitively and not increasing feelings of pressure on women or scaring younger women. Helping women to prioritise their own health and well-being, and taking time for themselves, would be beneficial.

> *And and my worry is that when I was, you know, if I was sitting on the loo looking at poster saying my menopause symptoms are gonna become better if I'm active. And I'm feeling really squeezed and really pressurized and I've got loads on. It's just another thing you feel is on the list and I don't know if that's the right approach. In some ways I I kind of think why are women feeling squeezed? Why are women feeling that they're the ones that have to do all these jobs?*

This participant went on to suggest that everyone is different and different methods or strategies may work differently for individuals or at different time points. Their suggestion was for a 'tool-box' with a range of suggestions that may help different people at different points – this could include relaxation, exercise or diet suggestions. Finding an activity that works for you was discussed and being aware that previous activities (e.g. running, swimming) may no longer appeal/be suitable.

> *I do go occasionally, but what I found was I kept getting ill every month I'd get like a viral bug or something and I'd get really run down and I suddenly thought this doesn't suit me. Perhaps I am just a walking and yoga person and and then when I had sort of this anxiety and this dress coming on, a friend suggested to me doing sort of mindfulness and meditation, that sort of thing which I found quite hard. But I tried to get into it. So I do like yoga and I do like being quiet and and so I've had to sort of learn who I am and what suits me*

Increased social support

Support from other people was clearly a strong facilitator to staying active during the MLS. Peer support, perhaps through an online environment to share experiences, boost confidence and provide validation that their symptoms are 'normal' was mentioned - having a support network in place.

> *I think I think they're all great suggestions. My suggestion was these of peer support, and whether that's in an online environment to allow sort of. Shared experiences and but also maybe peer support in terms of physical activity because sometimes doing it with somebody. Just gives a bit of confidence. So yeah, I think I think we can make use of those people that have lived experience. To support others and and sort of share about their stories and what's worked and and I guess normalizing what's happening? Well, that's what my suggestion.*

Enhanced opportunities

Supportive workplaces

Enhanced support from workplaces around menopause was mentioned, including maximising progress made during Covid in relation to flexible working and having menopause workplace policies. Interestingly, one participant highlighted progress in the workplace in relation to pregnancy (maternity leave, return to work etc) but that for many women menopause is consistently covered up in the workplace. Examples of good practice that were present in workplaces were mentioned, including menopause cafes, walking meetings and menopause walking groups. One participant suggested a mini-gym in work that had equipment that was easy to access would be beneficial. Time

of day was discussed as a barrier to activity by some with morning or evening tiredness/fatigue an issue so activity during the working day may provide an opportunity.

> *It's o'clock at night by that time, as others have said, I'm shattered. I I don't have any energy to go to 7:00 o'clock, Zumba class or even 7:00 o'clock yoga class.*

Menopause specific physical activity/exercise opportunities

Having a supportive environment to be active during the MLS was discussed, with some participants highlighting a lack of menopause specific exercise classes in their area.

> *There are no classes really in my relevant [city] and I live you know fairly near the city centre. It's easy to get about in [my city]. There are no classes that I'm aware of that are aimed at menopausal or postmenopausal perimenopausal women for any kind of exercise,*

Opportunities – the importance of walking and getting outside

Walking was discussed recurrently, getting outside and getting some fresh air with many of the women using walking to stay active, with an awareness this would boost mood, help with anxiety symptoms and give some time to yourself. Emphasizing that walking does not require any specialist skills or equipment but is a great way to meet physical activity guidelines may help those who feel they have low confidence to be active.

Opportunities – support for weight gain during menopause

Weight gain during the MLS was mentioned recurrently by participants and was seen as a barrier to being active.

Greater access to tools and resources

A couple of participants mentioned journaling as a way to monitor how they felt and boost motivation. This process helped these participants recognize how different behaviours made them feel. In some instances the diary was used to schedule activity and create a plan. One participant talked about forgetfulness, being aware that being active boosts mental well-being but either forgetting this feeling or forgetting to do an activity. Journaling may provide a strategy to help with this.

> *I started keeping a diary because I was struggling so much and I kept a diary of diet and sleep. And sleep was a big or lack of sleep and then dropped to sleep was a real symptom for me. And actually when I started exercising, I noticed a real correlation between sleeping better on the days I exercised to the days I didn't exercise and I think that's still very, very much the case.*

> *…and so, yeah, been journaling, but I think it is that front door thing because when I actually do something, I know I feel good, and I know that I should do it more often. But yeah, it's actually just sort of making myself do it. And I'm having issues with sleep as well. And I would agree if I did something, then I know I'm sleeping better*

One participant mentioned a specific strategy she had adopted to avoid procrastination:

> *And it's a 5 second rule. And you literacy. Right. I'm going to do this 54321. And then you act. And its owned really simple, but it was. It's almost like a you're bypassing your own responsibility to make that decision, and you're giving yourself and it's like you don't give*

yourself time to to think, you just do it and it and I'm not. Obviously it's not a cure all for everything, but it was amazing how having these three tips and techniques could just bypass that overthinking anxiety. Second guessing all those things that were not part of my life before menopause And It was really, really Amazing to find something that just It it almost forced me to go right.

Summary of research findings

The findings from this mixed-methods project provide important insights into the experiences of women during the menopause life stage. The questionnaire findings show the extent of menopausal symptoms and how they are related to mental well-being and physical activity. The focus group findings provide deeper insight into the participants' experiences of being physically active, what helps and what hinders them to be active, and how we can better support them.

Questionnaire summary

From the questionnaire, it was evident that for the participants recruited the menopause life stage was challenging. **Specifically, participants reported experiencing a range of menopausal symptoms with many of the symptoms having a high prevalence across the sample.** Notably both change to mood and brain fog were most commonly experienced. **Additionally, the participants in this study reported lower than population average scores on the WEMWBS, indicating lower mental well-being**. Many participants perceived that their menopausal symptoms impacted their mental well-being. Specifically, for 11 out of 14 symptoms, more than 60% of respondents indicated the symptom had a negative impact on their mental well-being. Further, changes to mood, difficulty sleeping (not due to night sweats), and brain fog had a negative impact on mental well-being for more than 80% of those women who experienced the symptom. Additional analysis also indicated that experiencing changes to mood, reduced sex-drive, and brain fog were associated with lower WEMWBS scores.

KEY POINTS FROM QUESTIONNAIRE

- **This sample reported experiencing both physical and mental health symptoms during the menopause life stage**
- **The participants had lower than average mental well-being scores**
- **There was some indication that menopausal symptoms negatively impacted mental well-being**
- **On average, the participants were physically active**
- **Menopausal symptoms were perceived to negatively impact the likelihood of being physically active, and 57% reported that their activity levels had decreased during the menopause life stage**
- **Those who met the physical activity guidelines had greater mental well-being than those who did not**

Recruiting those will low mental well-being is valuable for this research, as it enables us to better understand this population who may most benefit from support from SAMH and beyond. However, it is likely that the participants in this study do not represent population-level experiences of menopause due to the sampling methods and because the study will have recruited those with a specific interest in the topic. In order to further our understanding, it would be hugely valuable **to collect and evaluate population level data on the menopause**, potentially through the Scottish Health Survey to support the implementation of the Women's Health Plan.

Despite reporting challenging symptoms and lower levels of mental well-being, the percentage of the sample who achieved the moderate to vigorous physical activity (MVPA) guidelines was similar to the population average for this age range, and at a higher level for both MVPA and muscle strengthening guidelines. **Nevertheless, 57% reported that their physical activity levels had decreased during the menopause life stage, and 74% were interested in becoming more active.**

The participants reported that the majority of menopausal symptoms had considerable impact on their likelihood of being physically active. For example, for those who experienced changes in mood, difficulty sleeping (not due to night sweats), and muscle aches and joint pain around 70% reported that it would negatively impact the likelihood of them engaging in physical activity. **These findings indicate that the menopause life stage represents a time when being physically active can be difficult**.

KEY POINTS FROM THE FOCUS GROUPS

- **Multiple factors influenced this samples' physical activity behaviour**
- **The sample indicated that their physical and psychological capability to be active had been reduced by the menopause**
- **A supportive network helped participants to be active, and a lack of support hindered.**
- **For some, motivation and confidence to be active dropped during the menopause**
- **Participants were aware of the benefits of being physically active to make them feel better**
- **A range of initiatives are needed to support women to be active during the menopause**

There was no clear evidence of significant associations between meeting the MVPA guidelines and experiencing individual symptoms. However, it was evident that participants who met both the MVPA and muscle strengthening guidelines, and the muscle strengthening guideline alone scored significantly higher on the WEMWBS than those participants who did not meet the guidelines. **These differences were, on average, greater than 3 points on the WEMWBS highlighting an important association between physical activity and mental well-being in women during the menopausal life stage**.

For those experiencing each symptom, our analyses did not demonstrate consistent significant differences on WEMWBS score between those achieving the MVPA guidelines and those not. Nevertheless, for most symptoms those who did achieve MVPA consistently scored 2 to 3 points higher on WEMWBS than those not achieving MVPA.

During the menopausal life stage, the participants experienced a range of symptoms that were perceived to negatively impact their mental well-being and physical activity levels. However, being physically active was associated with higher mental well-being so it is important to find ways to better support women to be physically active.

Focus group summary

The focus groups provided rich and emotive data on the experiences of women during the menopausal life stage. The focus groups were structured around four core questions (what helps/hinders activity during the MLS; the influence of physical activity on mental wellbeing during the MLS; and what could be done better/differently to support women during the MLS to be physically active. Guided by the COM-B model, it was evident that behaviour was influenced by Capability (Physical and Psychological), Opportunity (Social and Physical), and Motivation (Reflective and Automatic).

Specifically in relation to physical capability, the dominant facilitator related to having access to HRT to manage symptoms, and therefore to increase physical activity levels. In contrast, there were a range of physical menopausal symptoms that reduced capability to be active (ranging from tiredness/reduced energy levels to heavy periods or weight gain). **Participants were aware their psychological capability had reduced, with changes in mental health during the MLS making it**

harder to be active. Low mood, feelings of being overwhelmed, feelings of stress, anxiety or negative thoughts were mentioned, along with feelings of brain fog.

The women spoke about physical opportunities to be active had to be close and easy to access. Similarly having access to a supportive healthcare team facilitated staying active. There was a recognition that in some cases, finding time to be active was a limiting factor, but many participants spoke about how the presence of a family dog facilitated activity as the dog had to be walked. This suggests prioritising self-care is challenging. There was a sense of frustration in some cases at the support available to women during the MLS, with the example that support given from workplaces in some cases had room for improvement. **The importance of support of other people was evident clearly in the focus groups, with participants' aware support from partners, family or friends helped them to stay active.** There was also an awareness social norms around menopause are shifting, with menopause discussed more openly and the participants stressed the importance of building on this momentum.

The focus group participants were aware motivation to be active had changed during the MLS, with an awareness that a drop in motivation was potentially a problem. Lack of motivation and lack of confidence to be active (either as a new concept or an ongoing issue that preceded the MLS) emerged as key themes in the discussion. **Importantly though, participants were aware being physically active made them feel better and eased menopausal psychological symptoms – particularly when active outdoors.** There was however, a sense of confusion in some individuals as to why motivating one-self to be active was so challenging when one gets clear benefits from it.

The participants identified a range initiatives to better support women to be physically active during the menopause including: **more education, enhanced opportunities, increased social support, greater access to tools and resources, prioritising self-care.**

Recommendations

In consultation with SAMH, these research findings were considered and recommendations made on how best to support women during the menopause life stage to create the conditions to be physically active and support mental well-being.

1. Integrate items on menopause into the Scottish Health Survey to extend understanding of the relationship between menopause life stage, mental well-being and physical activity at a population level.

2. Continue to support 'normalising' menopause in physical activity, workplace and broader society (e.g., by sharing case studies of good practice)

3. Provide opportunities for *everyone* to learn more about the nature of menopause, and how experiences can vary by individual (e.g., Women's Health Plan priority to launch a public health campaign to remove stigma and raise awareness of the symptoms of menopause)

4. Support health care professionals to be able to provide personalised support to women during the menopause life stage (in line with Women's Health Plan to ensure access to specialist menopause services)

5. Spotlight the mental health benefits of being physically active during the menopausal life stage.

6. Create opportunities for women to be physically active during the menopause life stage through intentionally inclusive programmes. Such opportunities may be 'menopause friendly' or 'menopause specific'

7. Create group-based opportunities for women to be physical active during the menopause life stage in order to provide social support and enhance social connectedness.

8. Signpost women to tools and resources to support mental well-being challenges during the menopause life stage

9. Prioritise the importance of self-care – be kind to oneself

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