

## **Evaluating Mums' Zone**

### **A combined intervention of physical activity and social support for new mums.**



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1 September 2020

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## Background

Mums' Zone is a holistic health and wellbeing intervention for new mums with the aim of improving mental and physical health through a program consisting of low-moderate intensity physical activity (yoga) and wellbeing support, messaging, and signposting. This also offered mums an opportunity to get together in a comfortable setting aiding social networking and peer support.

The Mums' Zone intervention (2 hours per week for 26 weeks) was delivered from September 2019 to March 2020 at four sites in Berkshire:

1. Places Leisure (Wokingham)

- a) St Crispin's Leisure Centre, London Road, Wokingham, RG40 1RE
- b) The Rainbow Centre, Rainbow Park, Winnersh, Wokingham, RG41 5SG

2. Get Berkshire Active (Slough)

- a) Monksfield Way Children's Centre, Monksfield Way, Slough, SL2 1QX
- b) Penn Road Children's Centre, Penn Road, Slough, SL2 1PG

Whilst women were encouraged to take part in as many sessions as possible, they could engage in as many or few sessions as they wish or were able to attend.

The intervention was supported by a small cohort (N = 5) of Mums' Zone Ambassadors (volunteers) who had an affiliation with the intervention, for example, a mum who had experience of suffering with their mental health. A key focus of the intervention was to improve mental health and early identification of postnatal depression. Mums' Zone Ambassadors received training and support in identification of warning signs and the signposting new mums to appropriate resources and professionals.

Participants completed a questionnaire designed specifically for the intervention by the Perinatal Physical Activity Research Group (PPARG) at three time points: 'Time 0 – baseline', 'Time 1 - 3 months', and 'Time 2 - 6 months'. The questionnaire was made up of Sport England's Demographic and Strategic Outcome measures (i.e. physical wellbeing, mental wellbeing, individual development, social and community development) [1], a version of the International Physical Activity Questionnaire (IPAQ) [2] adapted specifically for motherhood, and the previously validated Edinburgh Postnatal Depression Scale (EPDS) [3,4].

A control group was also included in the design with participants being recruited from other Children's Centres in the local community where the program had not been delivered. Whilst it was intended that the control group would also complete the same questionnaire at three time points, time only allowed for data collection at 'Time 0 – baseline' and 'Time 1 – 3 months.'

Quantitative data collected through the completion of questionnaires (repeated measures) was analysed by the PPARG using appropriate descriptive and inferential statistical measures. These findings are presented in this report.

In addition to completing questionnaires, participants were also invited to attend focus groups or interviews to provide ambassadors/facilitators with information on how Mums' Zone has affected their lives over the course of the program. This qualitative data was analysed separately by Get Berkshire Active and Places Leisure with the aim of producing case studies.

## Main Findings

### SECTION A: DEMOGRAPHIC AND STRATEGIC OUTCOME MEASURES

The evaluation of Mums' Zone involved 50 participants, with 39 women in the intervention group and 11 women in the control group. Participant recruitment and delivery sites (if applicable) is summarised in Table 1. Of the 39 new mums who agreed to participate in the intervention, 39 returned their 'Time 1 - 3 months' questionnaires and 30 completed the program by returning their 'Time 2 - 6 months' questionnaires.

**Table 1: Recruitment and delivery sites**

Participant Group	Site	Frequency	Percent	Cumulative Percent
<b>Intervention Group</b>	St Crispins, Wokingham	11	28.2	28.2
	Rainbow Centre, Wokingham	10	25.6	53.8
	Monksfield Way Children's Centre, Slough	16	41.0	94.9
	Penn Road Children's Centre, Slough	2	5.1	100.0
	<b>Subtotal</b>	<b>39</b>		
<b>Control Group</b>	Other site, Wokingham	5	45.5	45.5
	Other site, Slough	6	54.5	100.0
	<b>Subtotal</b>	<b>11</b>		
<b>ALL</b>	<b>TOTAL</b>	<b>50</b>		

Participants had an average age of 32.59 years (SD = 5.58) with most describing themselves as heterosexual (88%) and being of white ethnicity (54%). Just over a quarter (28%) of new mums reported experiencing a health condition or illness that have lasted or were expected to last more than 12 months with mental health issues reported in 50% of these cases. Of the women who reported a health condition or illness, 64% indicated that this impacted on their ability to do normal daily activities.

For most mums, this was their first child (58%). At baseline, participants' baby/babies were on average 24.5 weeks old (i.e. 4 months; SD = 12.91) with all new mums having

had their 6-8-week postnatal check. All but one of the participants gave birth to a single baby with most women going into labour between 37 and 41 weeks of gestation (i.e. full term; 76%) and having a hospital delivery (92%). For those mums who gave birth in a hospital, 36% reported a spontaneous delivery, 44% had an induced delivery, and 12% underwent an elective caesarean.

Just over half (58%) of the new mums reported regularly engaging in moderate intensity physical activity during their pregnancy (i.e. between 30 and 149 minutes on average per week or *fairly active*); with 30% indicating that they did less than 30 minutes (or *inactive*) and 12% reporting that they performed 150 minutes or more (or *active*).

Participants were also asked to provide some information around their subjective wellbeing. These results are presented in Figures 1 to 6.

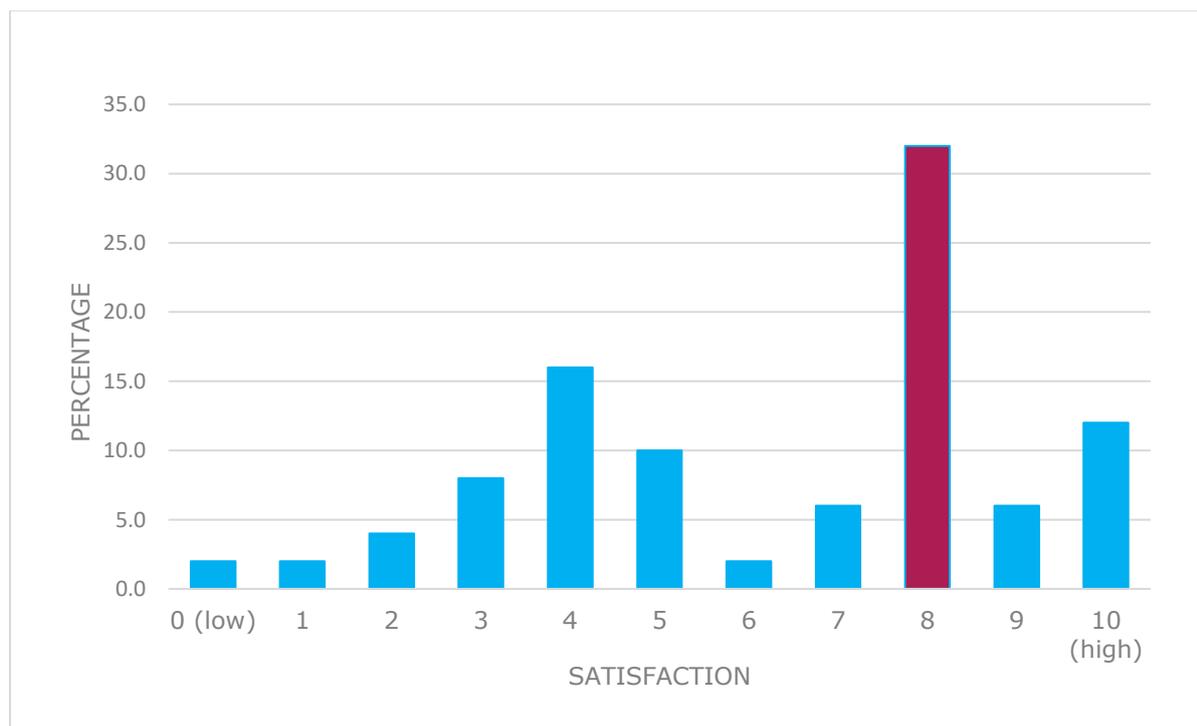


Figure 1. How satisfied are you with your life nowadays?

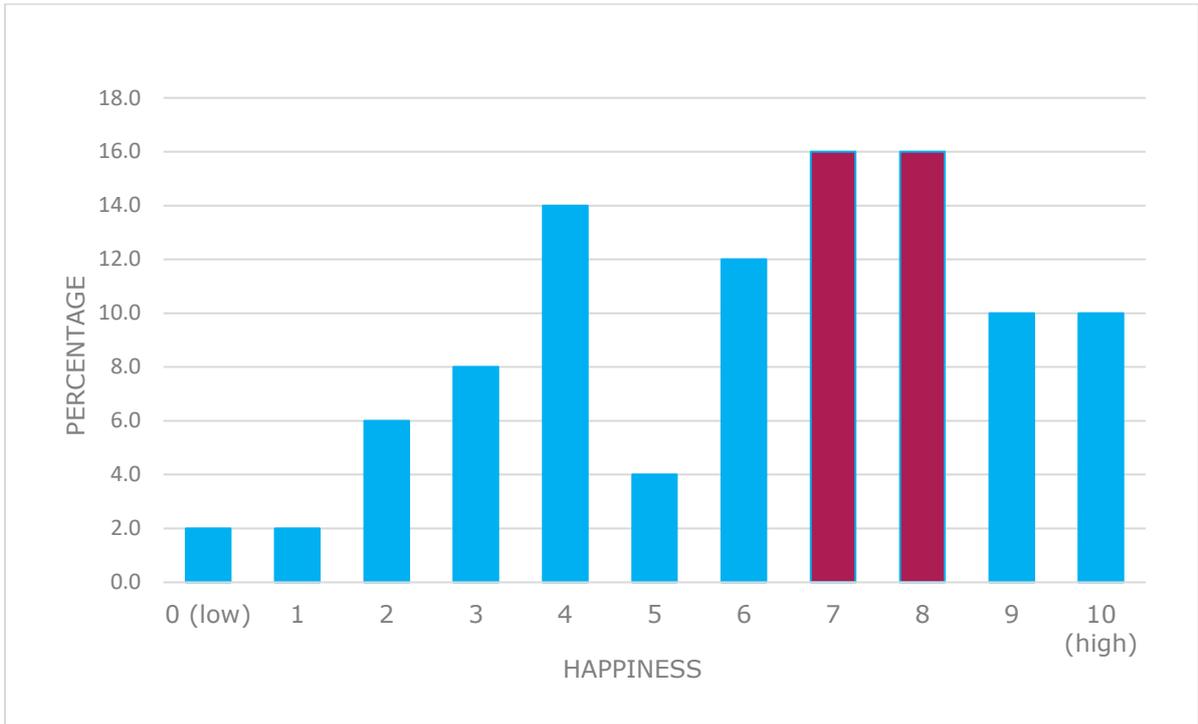


Figure 2. How happy did you feel yesterday?

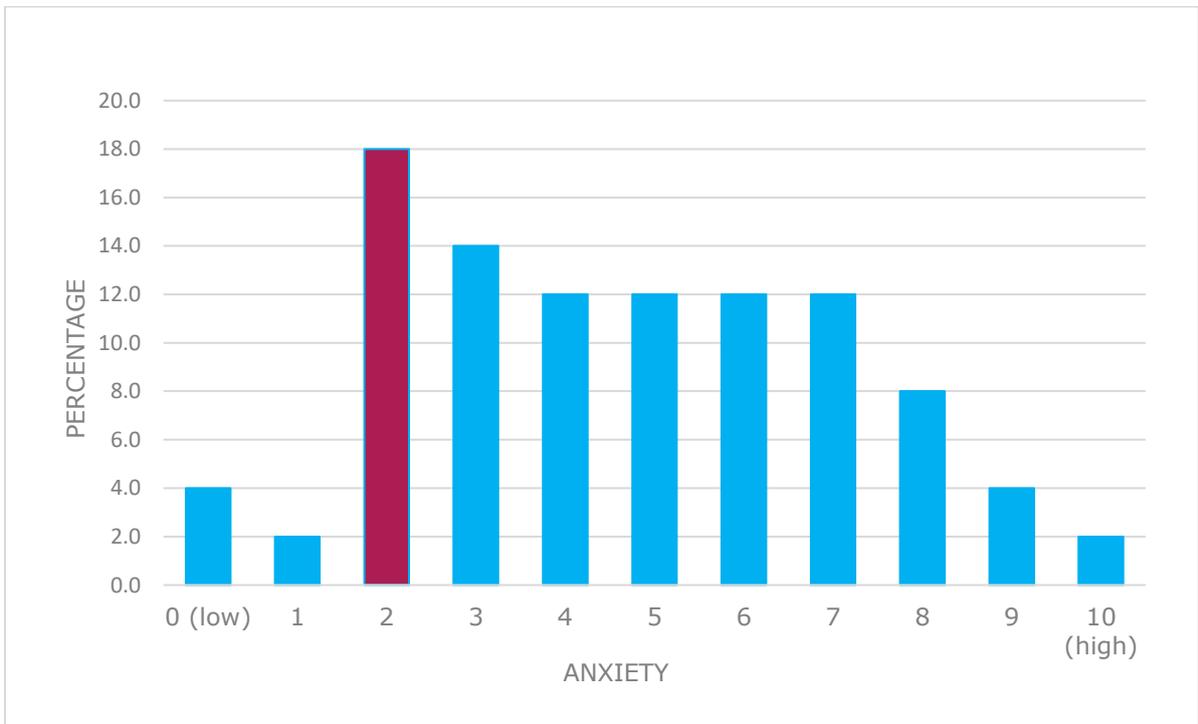


Figure 3. How anxious did you feel yesterday?

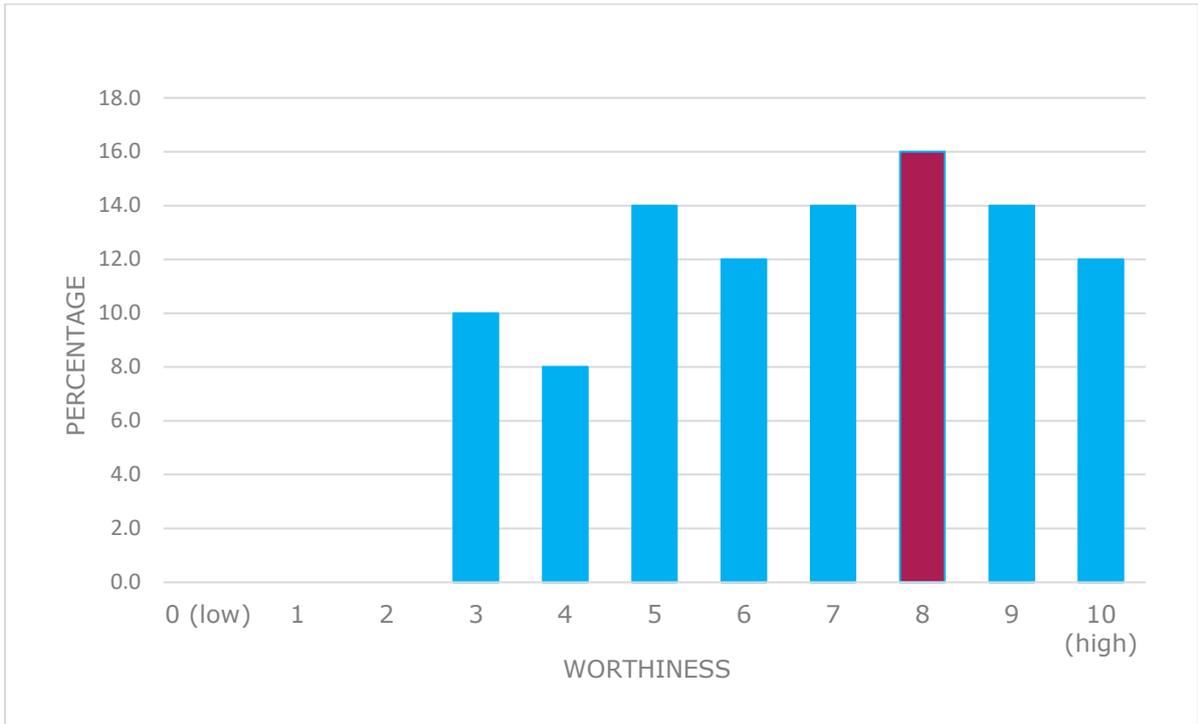


Figure 4. To what extent do you feel the things you do in your life are worthwhile?

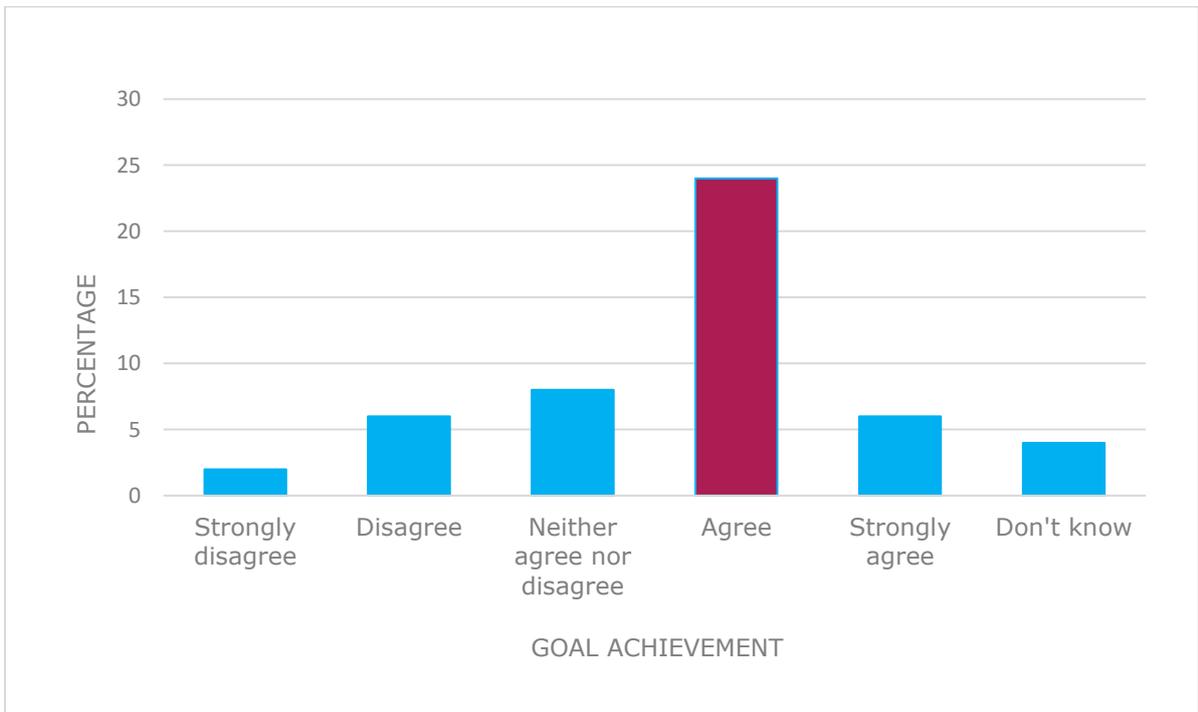


Figure 5. To what extent do you agree with the statement "I can achieve the goals I set myself"?

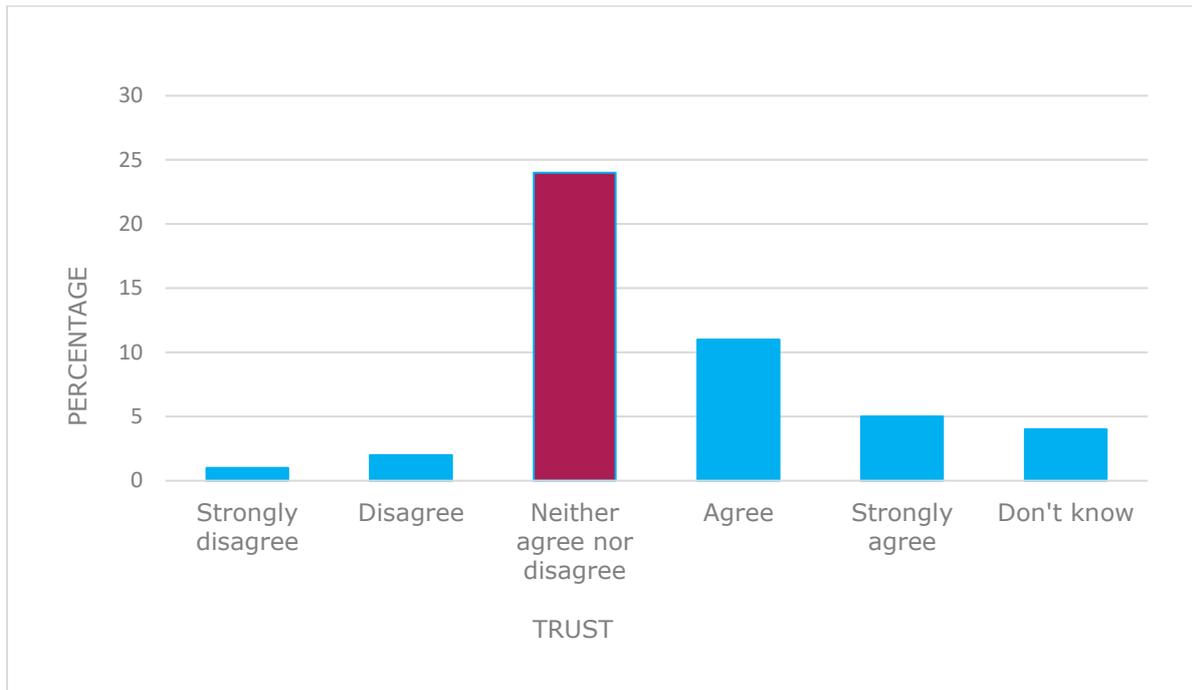


Figure 6. To what extent do you agree or disagree that most people in your local area can be trusted?

## SECTION B: PHYSICAL ACTIVITY

It is recommended that following childbirth women should aim to gradually build back up to accumulating 150 minutes of moderate intensity physical activity per week [5]. However, recent evidence has shown that there is no minimum amount of physical activity required to achieve some health benefits, with some activity being better than none [6].

Physical activity was measured using a version of the International Physical Activity Questionnaire (IPAQ) [2] adapted specifically for motherhood. This allowed for the identification of light intensity physical activity levels, moderate intensity physical activity levels, vigorous intensity physical activity levels, total physical activity levels, sitting time (or sedentary behaviour), and sleep.

When considering the distribution of the population sample and given the relatively small sample size, non-parametrical statistical procedures were used to analyse whether meaningful changes in physical activity levels occurred between time points.

### Light intensity physical activity levels

Light intensity physical activities refer to tasks which require little physical effort and does not make the individual breathe any faster than they normally would (<3 metabolic equivalents; METs). Examples include activities such as household chores, gentle stretching, shopping, casual walking, Tai Chi, etc.

**Table 2: Light physical activity levels**

Participant Group	Time Point	N	Mean (mins)	SD
Intervention Group	Time 0 - baseline	39	125.64	67.83
	Time 1 - 3 months	39	176.15	87.92
	Time 2 - 6 months	30	390.00	193.30
Control Group	Time 0 - baseline	10	132.00	119.33
	Time 1 - 3 months	11	80.91	47.84

Table 2 shows that mean light physical activity levels increased over the course of the program in the intervention group. Wilcoxon Signed-Ranks tests indicate that these differences were significant at (a) 'Time 0 - baseline' and 'Time 1 - 3 months' ( $Z = -3.55$ ,  $p = .000$ ); (b) 'Time 1 - 3 months' and 'Time 2 - 6 months' ( $Z = -4.32$ ,  $p = .000$ ); and (c) 'Time 0 - baseline' and 'Time 2 - 6 months' ( $Z = -4.62$ ,  $p = .000$ ).

Mean light physical activity levels however decreased significantly in the control group between 'Time 0 - baseline' and 'Time 1 - 3 months' ( $Z = -2.21$ ,  $p < .05$ ).

### Moderate intensity physical activity levels

Moderate intensity activities refer to tasks which make the individual breathe faster whilst they are still able to hold a conversation (3 - 6 METs). Examples include activities such as brisk walking, yoga, Pilates, aqua aerobics, group dance or aerobics classes, Zumba, jogging, etc.

**Table 3: Moderate intensity physical activity levels**

Participant Group	Time Point	N	Mean (mins)	SD
Intervention Group	Time 0 - baseline	39	69.10	51.30
	Time 1 - 3 months	39	97.69	51.26
	Time 2 - 6 months	30	102.00	41.39
Control Group	Time 0 - baseline	11	30.00	37.95
	Time 1 - 3 months	11	23.18	27.95

Table 3 shows that mean moderate physical activity levels increased over the course of the program in the intervention group. Wilcoxon Signed-Ranks tests indicate that these differences were significant at (a) 'Time 0 - baseline' and 'Time 1 - 3 months' ( $Z = -2.66, p < .05$ ); and (b) 'Time 0 - baseline' and 'Time 2 - 6 months' ( $Z = -3.00, p < .05$ ) but not between (c) 'Time 1 - 3 months' and 'Time 2 - 6 months' ( $Z = -.09, p > .05$ ).

Mean moderate physical activity levels decreased in the control group between 'Time 0 - baseline' and 'Time 1 - 3 months', however, the differences between scores were not significant ( $Z = -.82, p > .05$ ).

### **Vigorous intensity physical activity levels**

Vigorous intensity physical activities refer to activities that require significant physical effort and makes the individual breathe much faster than normal ( $>6$  METs). Examples include activities such as swimming laps, running, circuit training, CrossFit, etc.

Table 4 shows that mean vigorous physical activity levels increased over the course of the program in the intervention group. Wilcoxon Signed-Ranks tests indicate that these differences were significant at (a) 'Time 0 - baseline' and 'Time 1 - 3 months' ( $Z = -3.55, p = .000$ ); and (b) 'Time 0 - baseline' and 'Time 2 - 6 months' ( $Z = -4.11, p = .000$ ) but not between (c) 'Time 1 - 3 months' and 'Time 2 - 6 months' ( $Z = -1.68, p > .05$ ).

Mean vigorous physical activity levels decreased in the control group between 'Time 0 - baseline' and 'Time 1 - 3 months', however, the differences between scores were not significant ( $Z = -1.41, p > .05$ ).

**Table 4: Vigorous intensity physical activity levels**

Participant Group	Time Point	N	Mean (mins)	SD
Intervention Group	Time 0 - baseline	39	10.77	26.20
	Time 1 - 3 months	39	36.15	33.67
	Time 2 - 6 months	30	45.50	32.12
Control Group	Time 0 - baseline	10	12.00	25.30
	Time 1 - 3 months	11	0.00	0.00

**Total physical activity levels**

Total physical activity levels involve the combination of light, moderate and vigorous intensity physical activity levels.

**Table 5: Total physical activity levels**

Participant Group	Time Point	N	Mean (mins)	SD
Intervention Group	Time 0 - baseline	39	205.51	112.75
	Time 1 - 3 months	39	310.00	121.78
	Time 2 - 6 months	30	537.50	184.43
Control Group	Time 0 - baseline	11	160.91	157.76
	Time 1 - 3 months	11	104.09	56.34

Table 5 shows that mean total physical activity levels increased over the course of the program in the intervention group. Wilcoxon Signed-Ranks tests indicate that these differences were significant at (a) 'Time 0 - baseline' and 'Time 1 - 3 months' ( $Z = -4.05$ ,  $p = .000$ ); (b) 'Time 1 - 3 months' and 'Time 2 - 6 months' ( $Z = -4.27$ ,  $p = .000$ ); and (c) 'Time 0 - baseline' and 'Time 2 - 6 months' ( $Z = -4.78$ ,  $p = .000$ ).

Mean total physical activity levels decreased in the control group between 'Time 0 - baseline' and 'Time 1 - 3 months', however, the difference between scores were not significant ( $Z = -1.73$ ,  $p > .05$ ).

## Sedentary behaviour

Inactive and sedentary behaviours are those which involve being in a sitting, reclining or lying posture during waking hours, undertaking little movement or activity and using little energy above what is used at rest [2]. This includes time spent at work, at home, while doing course work and during leisure time and may involve activities such as sitting at a desk, reading, or sitting or lying down to watch television.

**Table 5: Sedentary behaviour**

Participant Group	Time Point	N	Mean (mins)	SD
Intervention Group	Time 0 - baseline	39	234.23	105.26
	Time 1 - 3 months	39	163.46	68.72
	Time 2 - 6 months	30	140.00	61.20
Control Group	Time 0 - baseline	10	240.00	116.62
	Time 1 - 3 months	11	271.36	89.61

Table 5 shows that sitting time (or sedentary behaviour) decreased over the course of the program in the intervention group. Wilcoxon Signed-Ranks tests indicate that these differences were significant at (a) 'Time 0 - baseline' and 'Time 1 - 3 months' ( $Z = -4.23$ ,  $p = .000$ ); (b) 'Time 1 - 3 months' and 'Time 2 - 6 months' ( $Z = -2.10$ ,  $p < .05$ ); and (c) 'Time 0 - baseline' and 'Time 2 - 6 months' ( $Z = -4.06$ ,  $p = .000$ ).

Mean sitting time (or sedentary behaviour) increased in the control group between 'Time 0 - baseline' and 'Time 1 - 3 months', however, the difference between scores were not significant ( $Z = -1.81$ ,  $p > .05$ ).

## Sleep

Sleep refers to the temporary state of rest during which an individual becomes physically inactive and unaware of the surrounding environment with many bodily functions, such as breathing, slowing down [7].

**Table 6: Sleep**

Participant Group	Time Point	N	Mean (mins)	SD
Intervention Group	Time 0 - baseline	39	369.62	98.21
	Time 1 - 3 months	39	399.62	66.59
	Time 2 - 6 months	30	430.50	59.11
Control Group	Time 0 - baseline	11	360.00	67.08
	Time 1 - 3 months	11	365.45	55.02

Table 6 shows that sleep increased over the course of the program in the intervention group. Wilcoxon Signed-Ranks tests indicate that these differences were significant at (a) 'Time 0 - baseline' and 'Time 1 - 3 months' ( $Z = -2.30, p < .05$ ); (b) 'Time 1 - 3 months' and 'Time 2 - 6 months' ( $Z = -2.43, p < .05$ ); and (c) 'Time 0 - baseline' and 'Time 2 - 6 months' ( $Z = -3.27, p < .05$ ).

Mean sleeping time increased somewhat in the control group between 'Time 0 - baseline' and 'Time 1 - 3 months', however, the difference between scores were not significant ( $Z = -.35, p > .05$ ).

## SECTION C: PERINATAL MENTAL HEALTH

Mental health issues affect 15-20% of women in the first year after childbirth, with depression and anxiety being the most common conditions [8]. In this intervention, depressive symptoms were observed using the previously validated Edinburgh Postnatal Depression Scale (EPDS) [3,4]. The maximum score for the scale is 30 with a score over 10 suggesting possible depression. Mums who score above 13 are likely to be suffering from a depressive illness of varying severity.

When considering the distribution of the population sample and given the relatively small sample size, non-parametrical statistical procedures were used to analyse whether meaningful changes in depressive scores occurred between time points.

**Table 7: Edinburgh Postnatal Depression Scale**

Participant Group	Time Point	N	Mean Score	SD
Intervention Group	Time 0 - baseline	39	10.64	4.98
	Time 1 - 3 months	39	6.90	3.44
	Time 2 - 6 months	30	6.07	3.02
Control Group	Time 0 - baseline	11	8.55	4.91
	Time 1 - 3 months	11	11.73	4.17

Table 7 shows that mean scores on the Edinburgh Postnatal Depression Scale decreased over the course of the program in the intervention group. Wilcoxon Signed-Ranks tests indicate that these differences were significant at (a) 'Time 0 - baseline' and 'Time 1 - 3 months' ( $Z = -4.89, p = .000$ ); (b) 'Time 1 - 3 months' and 'Time 2 - 6 months' ( $Z = -2.72, p < .05$ ); and (c) 'Time 0 - baseline' and 'Time 2 - 6 months' ( $Z = -4.35, p = .000$ ).

Mean scores on the Edinburgh Postnatal Depression Scale, however, significantly increased in the control group between 'Time 0 - baseline' and 'Time 1 - 3 months' ( $Z = -2.67, p < .05$ ).

## **Conclusion**

The postnatal period is a particularly vulnerable time where new mums may be susceptible to social isolation and postnatal depression. Getting active with others (e.g. partner, family, friends, or other new mums) is an opportunity to facilitate regular engagement with physical activity whilst also developing social support networks.

Although it must be recognised that this intervention involved a relatively small sample, the results are promising and suggests a positive association between the intervention and physical and mental health outcomes. Particularly, within the Mums' Zone intervention group, it was observed that whilst physical activity levels significantly increased, depressive symptoms significantly decreased.

Research investigating direct links between postnatal yoga and postnatal depression is limited [9,10] but this project adds to the evidence base, supporting yoga and social support as useful intervention in (1) increasing engagement with physical activity during the postnatal period and (2) preventing and treating postnatal depressive symptoms.

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