**Supplemental Table 1. Description of Studies Reviewed by Health Outcome**

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| **Selected Studies on Leisure-Time Physical Activity and Gestational Diabetes Mellitus (87)** | | | | | | | | | |
| **Author** | **Study Population** | **Design** | **Total Participants** | **Cases of GDM#** | **LTPA#**  **Measure** | | | **Pre-Pregnancy LTPA#**  **aOR (95% CI)#** | **Pregnancy LTPA#**  **aOR (95% CI)#** |
| Zhang et al., 2006 (95) | U.S. Nurses’ Health Study II | Prospective | 21,765 | 1,428 | Standardized questionnaire  HI: >40.4 MET-hr/wk  Ref: <4.8 MET-hr/wk | | | 0.81 (0.68-1.01) | NA |
| Redden et al., 2010 (76) | U.S. PRAMS | Cross-Sectional | 11,403 | 1,052 | Standardized questionnaire  HI: ≥ 5 d/wk  Ref: <1 d/wk | | | 0.69 (0.46-1.03) | NA |
| Rudra et al., 2006 (82) | U.S. OMEGA Study | Prospective | 897 | 42 | Minnesota LTPA Questionnaire  HI: ≥ 15 MET-hr/wk  Ref: None | | | 0.14 (0.05-0.38)\* | NA |
| U.S. Alpha Study | Case-Control | 688 | 216 | Minnesota LTPA Questionnaire  HI: ≥ 30 MET-hr/wk  Ref: None | | | 0.49 (0.28-0.87)\* | NA |
| Dempsey et al., 2004 (31) | U.S. OMEGA Study | Prospective | 909 | 42 | Stanford 7day Recall  HI: ≥ 28 MET-hr/wk  Ref: None | | | NA | 0.51 (0.27-0.97)\* |
| Dempsey et al., 2004 (30) | U.S. Alpha Study | Case-Control | 541 | 155 | Minnesota LTPA Questionnaire  HI: ≥ 30 MET-hr/wk  Ref: None | | | NA | 0.67 (0.31-1.43) |
| Oken et al., 2006 (64) | U.S. Project Viva | Prospective | 1,805 | 91 | Pregnancy Risk Assessment and Monitoring System  HI: ≥ 14 hr/wk  Ref: <2 hr/wk | | | 0.70 (0.30-1.68) | 0.91 (0.37-2.21) |
| Chasan-Taber et. al, 2008 (20) | U.S. Latina Pregnancy Study | Prospective | 1,006 | 33 | Kaiser Physical Activity Survey (KPAS)  Pre-pregnancy:  HI: KPAS ≥ 12.3  Ref: KPAS <7.9  Pregnancy:  HI: KPAS ≥ 10.7  Ref: KPAS <6.8 | | | 0.80 (0.20-2.70) | 0.80 (0.20-2.30) |
| Harizopoulou et al., 2009 (40) | Greek Hospital Study | Cross-Sectional | 160 | 40 | International Physical Activity Questionnaire  HI: ≥ 10 MET-hr/wk  Ref: < 10 MET-hr/wk | | | 0.13 (0.06-0.27)\* | 0.77 (0.71-0.84)\* |
| **Selected Studies on Leisure Time Physical Activity and Preeclampsia** | | | | | | | | | |
| **Author** | **Study Population** | **Design** | **Total Participants** | **Cases of Pre-eclampsia** | | **Physical Activity Measure** | | **Pre-Pregnancy LTPA**  **aOR (95% CI)** | **Pregnancy LTPA**  **aOR (95% CI)** |
| Sorenson et al., 2003 (86) | U.S. Seattle, WA Hospital Study | Case- Control | 584 | 201 | | Structured Interview for < 20wk gestation and year prior  Pre-pregnancy:  HI: >36.8MET-hr/wk  Ref: None  Pregnancy:  HI: >31.5MET-hr/wk  Ref: None | | 0.63 (0.34-1.18) | 0.44 (0.23-0.84)\* |
| Saftlas et al, 2004 (83) | U.S. New Haven, CN Clinic Study | Case-Control | 2638 | 44 | | Structured Interview for < 16 wk gestation and year prior  HI: Any, Ref: None | | 1.12 (0.48-2.61) | 0.56 (0.12-2.56) |
| Rudra et al., 2005 (81) | U.S. Seattle, WA Hospital Study | Case-Control | 714 | 244 | | Structured Interview for and year prior  Ratings of Perceived Exertion (RPE):  HI: 7-10, Ref: 0-2  LTPA:  HI: >30.0MET-hr/wk  Ref: None | | RPE  0.22 (0.11-0.44)\*  LTPA  0.50 (0.28-0.88)\* | --- |
| Rudra et al., 2008 (80) | U.S. OMEGA Study | Prospective | 2241 | 111 | | Stanford 7day Recall at ~15 wks gestation and Minnesota LTPA Survey for year prior Pre-pregnancy:  HI: >31.5MET-hr/wk  Ref: None  Pregnancy:  HI: >31.5MET-hr/wk  Ref: None | | 0.60 (0.30-1.26) | 0.96 (0.52-1.75) |
| Magnus et al, 2008 (55) | MoBa | Prospective | 59,573 | 2315 | | See Table 1. Only used Wk 17 LTPA.  Ref: None  1-5 x/mo  6-12 x/mo  13-24 x/mo  >25 x/mo | | --- | 1-5 x/mo  0.96 (0.85-1.07)  6-12 x/mo  0.96 (0.85-1.08)  13-24 x/mo  0.89 (0.78-1.03)  >25 x/mo  0.79 (0.65-0.96)\* |
| Osterdal et al, 2008 (67) | DNBC | Prospective | 85,139 | 2264 | | See Table 1. Only used Wk 16 LTPA.  Ref: None  1-44 min/wk  45-74 min/wk  75-149 min/wk  150-269 min/wk  270-419 min/wk  >420 min/wk | | --- | 1-44 min/wk  0.99 (0.81-1.20)  45-74 min/wk  1.04 (0.90-1.20)  75-149 min/wk  0.95 (0.83-1.09)  150-269 min/wk  0.92 (0.78-1.08)  270-419 min/wk  0.99 (0.77-1.28)  >420 min/wk  1.03 (0.74-1.44) |
| Fortner et al., 2011 (36) | U.S. Latina GDM Study | Prospective | 1043 | 30 | | Kaiser LTPA Survey at ~15 wks gestation  Sports/Exercise:  HI: 4th quartile  Ref: 1st quartile  Total Activity:  HI: 4th quartile  Ref: 1st quartile | | Sports/Exercise:   1. (0.4-2.5)   Total Activity  2.1 (0.7-6.2) | Sports/Exercise:   * 1. (0.1-1.6)   Total Activity  0.1 (0.01-1.3) |
| **Selected Studies on Leisure-Time Physical Activity Intervention and Gestational Weight Gain (GWG) in Overweight and Obese Women** | | | | | | | | | |
| **Author** | **Study Population** | **Design** | **Total Participants** | **BMI category** | | **Intervention** | | **Results** | **Successful in preventing excessive weight gain?** |
| Gray-Donald et al., 2000 (38) | Cree women of James Bay, Canada | Prospective | Intervention N=112; Historic controls, N=107. | All BMI categories. | | Goal to optimize gestational weight gain by use of exercise groups & dietary education via media campaign | | No difference between groups in GWG or rate of GWG | **Not successful** – No exercise prescription given. |
| Polley et al., 2002 (75) | Low income; Pittsburgh , U.S. | RCT | (N=121) | Normal weight, over-weight/ obese | | Randomized into stepped behaviour intervention, N=30; or usual prenatal care, N=30; Intervention received educational materials. | | Among overweight/ obese women 59% had excessive GWG in intervention group; 32% in usual care group | **Not successful** – Exercise intervention focused on increased walking & a more active lifestyle. |
| Olson et al., 2004 (65) | Low & middle/ upper income in Upstate NY, U.S. | Prospective | Enrolled in intervention, N=179; Historic controls, N=381 | Normal or over-weight | | Goal to use 2 tiers a) health care provider information b) materials mailed including newsletter, postcards, etc. | | Among historic controls 45% gained excessive; 41% in intervention group, p>0.05; Found overweight low income women benefited most. | **Not successfu**l- except in low income women.  No exercise prescription given. |
| Kinnunen et al., 2007 (50) | 6 maternity clinics from Finland |  | 3 clinics were intervention (N=49); 3 were control (N=56) received standard care; all women were primiparous | All BMI categories. | | Individual counseling on diet and physical activity plus information on weight gain recommendations. | | 46% of women in intervention group; 30% in control group exceeded GWG, p>0.05. | **Not successful**- did not increase activity or prevent excessive GWG. Supervised group exercise sessions once per week, 45-60min. Encouraged 800 MET minutes per week. |
| Claesson et al., 2008 (21) | Sweden | Prospective case-control intervent-ion | N=155 intervention; N=193 control group- received standard care | Obese | | To decrease total GWG to < 7 kg using behavioral intervention by weekly motivational talk using trained midwife. | | Intervention group had lower GWG & lost more weight at postnatal check-up than control but no difference in number of women who gained < 7 kg. | **Successful-** in controlling GWG for obese women, especially nulliparous. Offered aqua aerobic classes 1-2 times/wk. |
| Asbee et al., 2009 (8) | U.S. | RCT | Intervention group (N=57); Control (N=43) group- received standard care. | All BMI categories | | Counseling sessions by Dietitian and feedback on GWG. Recommended moderate PA 3-5 times per week. | | Intervention group had lower GWG than Control group, difference of 3.13 kg, p<0.01. | **Partially successful;** Not able to assess exercise effect on overweight or obese women in sample. |
| Guelinckx et al., 2010 (39) | Belgium | RCT | 3 groups; Passive intervention group, N=37; Active intervention group, N=42; Control, N=43; routine prenatal care | Obese | | Passive intervention (brochure on nutrition, PA, weight gain) vs Active intervention (brochure plus nutritionist in 3 groups sessions) to improve diet, PA & control GWG | | Dietary habits improved in intervention groups but all women decreased PA; no difference in GWG; Excessive GWG same in all groups. | **Not successful-** Percentage with >11.2 kg GWG was same for all groups. No exercise prescription given. |
| Mottola et al., 2010 (61) | Canada | Single-arm intervention matched to historical controls  (4 to 1) | Intervention group (N=65)  Historical controls (N=260) matched by BMI; age; parity | Over-weight and obese | | Nutrition & Exercise Lifestyle Intervention (NELIP) consisting of GDM dietary program with walking, using pedometer to count steps. | | GWG on NELIP was 6.8±4.1 kg; 0.38±0.2 kg/week; 80% did not gain excessively. | **Successful-** prevented excessive GWG. Exercise prescription (30% heart rate reserve) started at 25 min, 3-4 times/week; adding 2 min per week; until 40 minutes reached. |
| Shirazian et al., 2010 (85) | U.S. | Single-arm intervention matched to historical controls | Intervention (N=21) matched to historical controls (N=20) with standard care | Obese | | Lifestyle modification program consisting of information on nutrition, exercise & weight control. | | Intervention GWG was 8.1±7.4 kg; GWG in Control group was 15.4±7.5 kg; p<0.008 | **Successful-** Intervention group did not have as much GWG as control. No exercise prescription given. |
| Phelan et al., 2011 (71) | U.S. | RCT | N=90 Control group-routine care; Intervention group, N=87;  NW, N=97  Control group & N=92 Intervention group; | Normal weight, over-weight and obese | | Fit for Delivery- behavioral intervention– aims to decrease high fat foods, increase physical activity & self-monitoring. | | No significant effect on overweight/ obese but did prevent excessive weight gain in normal weight women | **Not successful-**  Overweight/obese women not different than control for GWG.  Exercise prescription- emphasized walking 30 min most days of the week. |
| Vinter et al., 2011 (91) | Denmark | RCT | N=360; 304 followed until delivery; LiP or control | Obese | | Lifestyle in Pregnancy (LiP) included dietary guidance, physical training and personal coaching. | | Limited GWG in intervention group (7.0 kg) compared to control group (8.6 kg) | **Partially Successful –** Excessive GWG exceeded in 35.4% in intervention group compared to 46.6% in control group (p=0.058). No exercise prescription given. |
| Artal et al., 2007 (7) | U.S. | Self-selected intervent-ion | Diet +exercise (N=39); Diet alone (N=57); | Obese with **GDM** | | Standard GDM diet for both groups; | | GWG/week lower in Diet+exercise intervention group. | **Successful** in limiting GWG. Encouraged 60% VO2peak at least 5 days/week; 50% of exercise group ≥ 150 min/week. |
| Davenport et al., 2008 (27) | Canada | Pilot Study  Intervention matched to control by age, BMI and insulin usage. | Control  (N-20)- conventional management (CM); Intervention-CM plus walking (N=10) | Over-weight and obese with **GDM** | | Goal to evaluate monitored walking program to conventional management alone on indices of glucose control | | CM+Walking group had improved glucose regulation & used fewer insulin units/kg/day in late pregnancy. Fifty % of women in both groups did not have excessive GWG. | **Partially Successful** in preventing excessive GWG (50%), however GDM improved in CM+Walking group. Walking=25 min, added 2 min/week until 40 min, 3-4 times per week. |
| **Selected Studies on Leisure-Time Physical Activity and Birth Weight** | | | | | | | | | |
| **Author** | **Study Population** | **Design** | **Total Participants** | **Birth Weight Outcome** | | | **Physical Activity Measure** | **SGA# / Low Birth Weight**  **aOR (95% CI)** | **LGA#/ Macrosomia**  **aOR (95% CI)** |
| Alderman et al., 1998 (1) | U.S. CO Hospital Study | Retrospec-tive | 291 | SGA: 22  LGA: 36 | | | Recalled frequency and duration of specific activities during pregnancy  HI: > 2 hrs/wk  Ref: None | 0.8 (0.3-2.3) | 0.3 (0.2-0.7)\* |
| Voldner et al., 2008 (92) | Norway, Oslo Hospital Study | Prospective | 553 | Macro-somia: 184 | | | Standardized questionnaire for pre-pregnancy, 1st, 2nd, and 3rd trimester LTPA  Ref: > 1 hr/wk  LO: < 1 hr/wk | ---- | Pre-pregnancy:  2.9 (1.2-7.3)  1st, 2nd, or 3rd Trimester:  Adjusted OR’s not reported |
| Hegaard et al., 2009 (43) | Denmark Hospital Study | Prospective | 4458 with term deliveries | Low Birth Weight and  Macro-somia (#’s not given) | | | Survey on sport participation (yes/no) and LTPA classification in 2nd and 3rd Trimester  Sports:  HI: > 3hr/wk  Ref: none  LTPA:  HI: Moderate/Heavy  Ref: Sedentary | 2nd Trimester  Sports  1.1 (0.4-2.7)  LTPA  1.7 (0.6-4.7)  3rd Trimester  Sports  0.8 (0.3-2.8)  LTPA  0.6 (0.1-4.3) | 2nd Trimester  Sports  0.85 (0.4-1.6)  LTPA  0.7 (0.3-1.5)  3rd Trimester  Sports  1.5 (0.8-2.9)  LTPA  1.1 (0.4-2.8) |
| Owe et al., 2009 (68) | MoBa | Prospective | 36,869 (16,064 multiparous, 20,805 nulliparous) | LGA: 4,033 (2,263 multi-parous, 1,770 nulliparous) | | | See Table 1  HI: > 3x/wk  Ref: none | --- | Nulliparous Results  Prepregnancy  0.85 (0.68-1.06)  2nd Trimester  0.72 (0.56-0.93)\*  3rd Trimester  0.77 (0.61-0.96)\* |
| Juhl et al., 2010 (47) | DNBC | Prospective | 79,692 | SGA:7797  LGA: 8268 | | | See Table 1  >5 hr/wk  >3-5 hr/wk  >2-3 hr/wk  >1-2 hr/wk  >0-1 hr/wk  Ref: None | (Hazard Ratios)  >5 hr/wk:  1.04 (0.87-1.23  >3-5 hr/wk:  0.83 (0.72-0.95)\*  >2-3 hr/wk  1.00 (0.89-1.14)  >1-2 hr/wk  0.83 (0.76-0.91)\*  >0-1 hr/wk  0.87 (0.81-0.93)\* | (Hazard Ratios)  >5 hr/wk:  0.72 (0.57-0.91)\*  >3-5 hr/wk:  0.89 (0.77-1.04)  >2-3 hr/wk  0.85 (0.74-0.98)\*  >1-2 hr/wk  0.90 (0.82-0.98)\*  >0-1 hr/wk  0.98 (0.92-1.05) |
| Mudd et al., *In Press* (62) | U.S. POUCH Study | Retrospec-tive | 596 Subcohort, 418 Non-Subcohort | SGA (63 Subcohort, 19 Non-Subcohort); LGA (68 Subcohort, 75 Non-Subcohort) | | | Recall of Pregnancy LTPA at 3-9 years postpartum  HI:> 150 min/wk  Ref: None | Subcohort:  1.10 (0.59-2.06)  Non-Subcohort:  0.20 (0.04-1.08) | Subcohort:  0.68 (0.34-1.34)  Non-Subcohort:  0.30 (0.14-0.64)\* |
| **Selected Studies on Leisure-Time Physical Activity and Preterm Delivery** | | | | | | | | | |
| **Author** | **Study Population** | **Design** | **Total Participants** | **Cases of Preterm Delivery** | | **Physical Activity Measure** | | **Pre-Pregnancy LTPA**  **aOR (95% CI)** | **Pregnancy LTPA**  **aOR (95% CI)** |
| Hatch et al., 1998 (41) | U.S. PA/NY Clinic Study | Prospective | 557 | Not Stated | | Standardized questionnaire at 13, 28, and 36 wks gestation  HI: > 1000 kcal/wk  Ref: none | | --- | Delivery 32 wks   * 1. (0.00-0.52)\*   Delivery 34 wks  0.04 (0.00-0.65)\*  Delivery 36 wks  0.11 (0.02-0.81)\* |
| Misra et al., 1998 (59) | U.S. MD Clinic Study | Prospective | 1166 with LTPA info | 198 | | Interview on 1st and 2nd trimester LTPA  HI: > 60 days  Ref: <60 days | | --- | 0.51 (0.27-0.95)\* |
| Evenson et al, 2002 (34) | U.S. PIN Study | Prospective | 1699 | 193  (113 Spon-taneous) | | Telephone interview on Vigorous LTPA for pre-pregnancy, 1st and 2nd Trimester  Any vs. None | | 1.06 (0.71-1.57) | 1st Trimester  0.80 (0.48-1.35)  2nd Trimester  0.52 (0.24-1.11) |
| Juhl et al, 2008 (46) | DNBC | Prospective | 87,232 | 4,279 | | See Table 1  Ref: None  >0-5, >5-10, >10-15, >15 MET-hrs/wk | | --- | >0-5 MET-hrs/wk:  0.77 (0.68-0.87)\*  >5-10 MET-hrs/wk:  0.82 (0.74-0.91)\*  >10-15 MET-hrs/wk:  0.83 (0.71-0.96)\*  >15 MET-hrs/wk:  0.88 (0.78-1.00) |
| Owe et al, 2011  (in press) (70) | MOBA | Prospective | 61,098 | 3181 | | See Table 1.  LTPA reported in weeks 17 and 30 used  Ref: None  3-5 x/wk | |  | Week 17, 3-5 x/wk:  0.82(0.73-0.91)\*  Gestational age 2.45 days longer vs. No LTPA (p<0.0001)  Week 30, 3-5 x/wk:  0.74 (0.65-0.83)\* |
| **Selected Studies on Leisure-Time Physical Activity and Child Weight Status** | | | | | | | | | |
| **Author** | **Study Population** | **Design** | **Total Participants** | **Outcome** | | **Physical Activity Measure** | | **Results** | |
| Clapp, 1996 (22) | U.S. Study | Exposure-Control | 40 | Child Weight, Skinfolds at 5 yrs | | 20 women exercised vigorously throughout pregnancy, 20 women did not (exercise directly monitored) | | Birth (Exercise v. Control)  Weight: 3.4±0.8 v. 3.6±0.7 kg   (p<0.05)  Fat: 10.5%±0.9 v. 15.1%±0.6   (p<0.05)  5 yrs (Exercise v. Control)  Weight: 18.0±0.5 v. 19.5±0.6 kg   (p<0.05)  Sum of Skinfolds: 37±1 v. 44±2 mm   (p<0.05) | |
| Mattran et al, 2011 (56) | U.S. MI Clinic Study | Retrospec-tive | 23 | Child weight, weight-for-height z-score at 16-22 mo | | Modifiable Activity Questionnaire administered at 16-22mo postpartum  MET-hrs/wk in 1st, 2nd, 3rd trimester | | 1st and 2nd trimester LTPA not significantly related to child outcomes  3rd trimester LTPA  Weight rs = -0.39 (p=0.06)  Weight-for-Height z-score rs= -0.40 (p=0.06) | |

#Abbreviations: aOR = adjusted Odds Ratio, 95%CI=95% Confidence Interval, GDM=Gestational Diabetes Mellitus, LTPA=Leisure-Time Physical Activity, SGA=Small for Gestational Age, LGA=Large for Gestational Age

\*significant p-value <0.05