SUPPLEMENTARY MATERIAL

Online Supplement 1. Full literature search strategy.

Literature search strategy used: Ovid MEDLINE(R) Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) <1946 to Present>

--------------------------------------------------------------------------------
1  exp Exercise/ or Athletes/ or exp Exercise Movement Techniques/ or Physical Exertion/ or exp Exercise Therapy/ or exp Sports/ or Motor Activity/ or (exercise or physical* activ* or strenuous activit* or running or walk or walking or plyometric* or yoga or tai chi or weight training or resistance training or swim* or sport* or athlet* or mvpa or ltpa or stretching).ti,ab,kf. or ((muscle or muscular or strength*) adj2 conditioning).ti,ab,kf. or (weight* adj2 lift*).ti,ab,kf.
2  exp Pregnancy/ or exp Pregnancy Complications/ or pregnan*.ti,ab,hw,kf. or exp Pregnancy Trimesters/ or Peripartum Period/ or (antenatal or prenatal or perinatal or prepartum or antepartum or pre partum or ante partum or trimester* or obstetric* or primigravid* or primiparous or multiparous or multigravid* or obstetric* or gestation* or pre-eclampsia* or preeclampsia* or umbilical blood flow or umbilical arter* flow).ti,ab,kf. or (exp Uterus/ and exp Regional Blood Flow/) or (uterine blood flow or uterine circulation).ti,ab,kf.
3  (maternal adj5 (blood pressure or hypotensi* or heart rate* or bradycardia or cardiac output* or stroke volume or blood flow or circulation or arter* flow or oxygen saturation or oxygen delivery or h?emodynamic* or peripheral resistance or diastolic or systolic)).ti,ab,kf. or (maternal.mp. and exp Cardiac Output/)
4  exp Fetus/ or exp Fetal Diseases/ or fetal weight/ or birth weight/ or infant, low birth weight/ or infant, small for gestational age/ or infant, very low birth weight/ or infant, extremely low birth weight/ or infant, premature/ or infant, extremely premature/ or (fetus or f?etal or ((premature or preterm) adj3 (birth* or delivery or labo?r or infant*)) or birthweight or birth weight or "small for gestational age" or sga or intrauterine growth restriction or iugr).ti,ab,kf.
5  2 or 3 or 4
6  1 and 5
7  exp Pregnancy/ or pregnan*.ti,ab,hw,kf. or exp Pregnancy Trimesters/ or Peripartum Period/ or (antenatal or prenatal or perinatal or prepartum or antepartum or pre partum or ante partum or trimester* or obstetric* or primigravid* or primiparous or multiparous or multigravid* or obstetric* or gestation* or f?etal or f?etus).ti,ab,kf. or exp Fetus/ or exp Fetal Diseases/
8  (complication* or death or mortality or morbidity or adverse).ti,ab,kf. or (ae or co).fs.
9  7 and 8
10  (stillbirth or miscarriage).mp.
11  9 or 10
12  1 and 11
13  6 or 12
14  Supine Position/ or posture/ or (((lie or lying) adj2 (flat or down or horizontal* or 30 degree* or thirty degree*)) or ((horizontal* adj2 position*) or reclin* or supine or recumbant)).ti,ab,kf. or (standing position* or 60 degree* pr sixty degree* or upright position* or left lateral or (body adj3 position*)).ti,ab,kf.
15  13 and 14
16  (exercis* adj5 position*).ti,ab,kf. or (crunch or crunches or "sit up*" or "situp* or v-sit*" or bench press* or "shoulder bridge*" or "abdominal bridge*" or "hip raise*" or "leg lift*").ti,ab,kf.
Ovid Embase <1974 to 2017 to Current>

Database: Embase <1974 to 2017 November 08>
Search Strategy:

--------------------------------------------------------------------------------
1  exp exercise/ or athlete/ or exp kinesiotherapy/ or exp sport/ or exp physical activity/ or
(exercise or physical* activ* or running or plyometric* or yoga or tai chi or weight training or
resistance training or swim* or sport* or athlet* or walk or walking or mvpa or ltpa or
stretching).ti,ab,kw. or (weight* adj2 lift*).ti,ab,kw. or ((muscle or muscular or strength*) adj2
conditioning).ti,ab,kw.
2  exp Pregnancy/ or exp Pregnancy Complication/ or pregnan*.ti,ab,hw,kw. or exp Pregnancy
Trimesters/ or Peripartum Period/ or Fetus/ or exp Fetus Disease/ or uterus blood flow/ or
(antenatal or prenatal or perinatal or prepartum or antepartum or pre partum or ante partum or
trimester* or obstetric* or primigravid* or primiparous or multiparous or multigravid* or
obstetric* or gestation* or pre-eclampsia or preeclampsia* or umbilical blood flow or umbilical
arter* flow or uterine blood flow or uterine circulation).ti,ab,kw.
3  (maternal adj5 (blood pressure or hypotensi* or heart rate* or bradycardia or cardiac output* or
stroke volume or blood flow or circulation or arter* flow or oxygen saturation or oxygen
delivery or h?emodynamic* or peripheral resistance or diastolic or systolic)).ti,ab,kw. or
(maternal.mp. and heart output/)
4  birth weight/ or low birth weight/ or small for date infant/ or exp very low birth weight/ or
prematurity/ or fetus weight/ or (fetus or f?etal or ((premature or preterm) adj3 (birth* or
delivery or labo?r or infant*))).ti,ab,kw. or (birthweight or birth weight or "small for gestational
age" or sga or intrauterine growth restriction or iugr).ti,ab,kw.
5  2 or 3 or 4
6  1 and 5
7  exp Pregnancy/ or pregnan*.ti,ab,hw,kw. or exp Pregnancy Trimesters/ or Peripartum
Period/ or Fetus/ or (antenatal or prenatal or perinatal or prepartum or antepartum or pre partum or
ante partum or trimester* or obstetric* or primigravid* or primiparous or multiparous or
multigravid* or obstetric* or gestation* or fetus or fetal).ti,ab,kw.
8  (complication* or death or mortality or morbidity or adverse).ti,ab,kw. or (ae or co).fs.
9  7 and 8
10 (stillbirth or miscarriage).mp.
11  9 or 10
12  1 and 11
13  6 or 12
14  body position/ or supine position/ or (((lie or lying) adj2 (flat or down or horizontal* or 30
degree* or thirty degree*)) or ((horizontal* adj2 position*) or reclin* or supine or
recumbent)).ti,ab,kw. or (standing position* or 60 degree* or sixty degree* or upright position*
or left lateral or (body adj3 position*).ti,ab,kw.15  13 and 14

17 (5 or 11) and 16
18 15 or 17
19 animals/ not (humans/ and animals/)
20 18 not 19
21 remove duplicates from 20
16 (exercis* adj5 position*).ti,ab,kw. or (crunch or crunches or "sit up*" or "situp* or v-sit*") or bench press* or "shoulder bridge*" or "abdominal bridge*" or "hip raise*" or "leg lift*").ti,ab,kw.

17 (5 or 11) and 16
18 15 or 17
19 animal/ not (human/ and animal/)
20 18 not 19
21 remove duplicates from 20

PsycINFO <1806 to Current>

1 physical activity/ or exp exercise/ or activity level/ or athletes/ or exp sports/ or ((exercise or physical* activ* or strenuous activit* or running or plyometric* or yoga or tai chi or weight training or resistance training or swim* or sport* or athlet* or walk or walking or mvpa or ltpa or stretching).ti,ab,id. or ((weight* adj2 lift*) or ((muscle or muscular or strength*) adj2 conditioning))).ti,ab,id.
2 exp pregnancy/ or exp obstetrical complications/ or pregnan*.ti,hw,ab,id. or (antenatal or prenatal or perinatal or prepartum or antepartum or pre partum or ante partum or trimester* or primigravid* or primiparous or multiparous or multigravid* or obstetric* or gestation* or pre-eclamps* or preeclamps* or umbilical blood flow or umbilical arter* flow or uterine blow flow or uterine circulation).ti,ab,id.
3 (maternal adj5 (blood pressure or hypotensi* or heart rate* or bradycardia or cardiac output* or blood flow or circulation or arter* flow or oxygen saturation or oxygen delivery or hemodynamic* or peripheral resistance or diastolic or systolic)).ti,ab,id.
4 prenatal developmental stages/ or prenatal development/ or fetus/ or premature birth/ or birth weight/
5 (fetus or fet*al or ((premature or preterm) adj3 (birth* or delivery or labor* or infant*))) or birthweight or birth weight or "small for gestational age" or sga or intrauterine growth restriction or iugr).ti,ab,id.
6 2 or 3 or 4 or 5
7 1 and 6
8 exp pregnancy/ or pregnan*.ti,hw,ab,id. or (antenatal or prenatal or perinatal or prepartum or antepartum or pre partum or ante partum or trimester* or primigravid* or primiparous or multiparous or multigravid* or obstetric* or gestation*).ti,ab,id.
9 (complication* or death or mortality or morbidity or adverse).ti,ab,id.
10 8 and 9)
11 (miscarriage or stillbirth).mp.
12 10 or 11
13 1 and 12
14 7 or 13
15 posture/ or (((lie or lying) adj2 (flat or down or horizontal* or 30 degree* or thirty degree*)) or (horizontal* adj2 position*) or reclin* or supine or recumbent)).ti,ab,id. or (standing position* or 60 degree* or sixty degree* or upright position* or left lateral or (body adj3 position*)).ti,ab,id.
(exercis* adj5 position*).ti,ab,id. or (crunch or crunches or "sit up*" or "situp* or v-sit*"
or bench press* or "shoulder bridge*" or "abdominal bridge*" or "hip raise*" or "leg lift*").ti,ab,id.

(6 or 12) and 17

limit 19 to human

CINAHL Plus with Full-text, 1937-Current

S1 ( (MH "Exercise+") OR (MH "Athletes+") OR (MH "Therapeutic Exercise+") OR (MH "Physical Fitness+") OR (MH "Physical Activity") OR (MH "Physical Endurance+") OR (MH "Exertion+") OR (MH "Sports+") OR (MH "Yoga+") OR (MH "Tai Chi") ) OR ( exercise or "physical* activ*" or "strenuous activit*" or running or plyometric* or yoga or "tai chi" or "weight training" or "resistance training" or swim* or sport* or athlet* or walk or walking or mvpa or ltpa or stretching or "aerobic capacity" or fitness or weight* n2 lift* or (muscle or muscular or strength*) n2 conditioning )

S2 ( (MH "Pregnancy Complications+") OR (MH "Pregnancy Outcomes") OR (MH "Pregnancy Trimesters+") OR (MW pregnan*) ) OR ( antenatal or prenatal or perinatal or prep partum or antepartum or "pre partum" or "ante partum" or trimester* or obstetric* or primigravid* or primiparous or multiparous or multigravid* or gestation* or "pre-eclampsia*" or preeclampsia* or "umbilical blood flow" or "umbilical arter* flow" or "uterine blood flow" or "uterine circulation" ) OR ( maternal n5 ("blood pressure" or hypotensi* or "heart rate*" or bradycardia or "cardiac output*" or "blood flow" or circulation or "arter* flow" or "oxygen saturation" or "oxygen delivery" or "peripheral resistance" or diastolic or systolic) ) OR ( maternal and (MH "Cardiac Output+") ) OR ( (MH "Fetus+") OR (MH "Fetal Abnormalities") or (MH "Fetal Circulation") ) OR ( (MH "Fetal Weight") OR (MH "Infant, Low Birth Weight+") OR (MH "Infant, Premature") ) OR ( fetus OR foetal or ((premature or preterm) w3 (birth* or delivery or labor or infant*)) or birthweight or "birth weight " or "small for gestational age" or sga or "intrauterine growth restriction" or iugr ) OR ((MH "Blood Circulation") AND (MH "Uterus+") )

S3 S1 AND S2

S4 ((MH "Pregnancy Trimesters+") OR (MW pregnan*) or antenatal or prenatal or perinatal or prep partum or antepartum or "pre partum" or "ante partum" or trimester* or obstetric* or primigravid* or primiparous or multiparous or multigravid* or gestation* or (MH "Fetus+") or fetus OR foetal) AND (complication* or death or mortality or morbidity or adverse)

S5 miscarriage OR stillbirth

S6 S4 OR S5

S7 S1 AND S6

S8 S3 OR S7

S9 (MH "Supine Position") OR (MH "Body Positions+") OR (supine or "left lateral" or reclin* or recumbent or (lie or lying) n2 (flat or down or horizontal*) OR (horizontal* or sleep* or rest* or body) n2 position* or "standing position*" or "60 degree*" or "sixty degree*" or "upright position*" or "left lateral" or (body w3 position*) or crunch or crunches or "sit up*" or "situp*" or "v-sit*" or "bench press*" or "shoulder bridge*" or "abdominal bridge*" or "hip raise*" or "leg lift*")
S10 S8 AND S9
S11 (MH "Exercise Positions+)") or exercis* n5 position*
S12 S2 and S11
S13 S10 or S12

SportDiscus, ERIC, Child Development & Adolescent Studies

S1 exercise or "physical* activ*" or "strenuous activit*" or running or plyometric* or yoga or "tai chi" or "weight training" or "resistance training" or swim* or sport* or athlet* or walk or walking or mvpa or ltpa or stretching or "aerobic capacity" or fitness or weight* n2 lift* or (muscle or muscular or strength*) n2 conditioning
S2 pregnan* or antenatal or prenatal or perinatal or prepartum or "pre partum" or "ante partum" or trimester* or obstetric* or primigravid* or primiparous or multiparous or multigravid* or obstetric* or gestation* or "pre-eclampsia*" or preeclampsia* or "umbilical blood flow" or "umbilical arter* flow" or "uterine blood flow" or "uterine circulation" or fetus or foetus or fetal or foetal or (premature or preterm) w3 (birth* or delivery or labor or infant*) or birthweight or "birth weight " or "small for gestational age" or sga or "intrauterine growth restriction" or iugr or "pre-eclampsia*" or preeclampsia* or "umbilical blood flow" or "umbilical arter* flow" or maternal n5 (blood pressure or hypotensi* or "heart rate*" or bradycardia or "cardiac output*" or "blood flow" or circulation or" arter* flow" or "oxygen saturation" or "oxygen delivery" or "peripheral resistance" or diastolic or systolic) or miscarriage OR stillbirth
S3 supine or "left lateral" or reclin* or recumbent or (lie or lying) n2 (flat or down or horizontal*) OR (horizontal or sleep* or rest* or body) n2 position or "standing position*" or "60 degree*" or "upright position*" or "left lateral" or crunch or crunches or "sit up*" or "situp*" or "v-sit*" or "bench press*" or "shoulder bridge*" or "abdominal bridge*" or "hip raise*" or "leg lift*"
S4 S1 AND S2 AND S3
S5 exercis* n5 position*
S6 S2 and S5
S7 S4 OR S6

Scopus

(( TITLE ( exercise OR "physical* activ*" OR "strenuous activit*" OR running OR plyometric* OR yoga OR "tai chi" OR "weight training" OR "resistance training" OR swim* OR sport* OR athlet* OR walk OR walking OR mvpa OR ltpa OR stretching OR "aerobic capacity" OR fitness OR (weight* W/2 lift*) OR (( muscle OR muscular OR strength*) W/2 conditioning ) ) OR ( KEY ( exercise OR "physical* activ*" OR "strenuous activit*" OR running OR plyometric* OR yoga OR "tai chi" OR "weight training" OR "resistance training" OR swim* OR sport* OR athlet* OR walk OR walking OR mvpa OR ltpa OR stretching OR "aerobic capacity" OR fitness OR (weight* W/2 lift*) OR (( muscle OR muscular OR strength*) W/2 conditioning ) ) ) ) AND TITLE-ABS-KEY ( supine OR "left lateral" OR reclin* OR degree* OR recumbent OR ( lie OR lying ) W2 ( flat OR down OR horizontal* ) ) OR ( ( horizontal* OR sleep* OR rest* OR body ) W2 position* ) OR "standing position*" OR "60 degree*" OR OR "sixty degree*" OR "upright position*" OR "left lateral" OR "body position*" ) ) AND ( (
TITLE-ABS-KEY (pregnan* OR antenatal OR prenatal OR perinatal OR prepartum OR antepartum OR "pre partum" OR "ante partum" OR primigravid* OR primiparous OR multiparous OR multigravid* OR trimester* OR obstetric* OR gestation* OR fetus OR foetus OR fetal OR foetal OR birthweight OR "birth weight" OR "small for gestational age" OR sga OR "intrauterine growth restriction" OR iugr OR "pre-eclampsia*" OR preeclampsia* OR "umbilical blood flow" OR "umbilical artery* flow" OR "uterine blood flow" OR "uterine circulation" OR miscarriage OR stilbirth ) OR ( TITLE-ABS-KEY ((( premature OR preterm ) PRE/3 (birth* OR delivery OR labor OR infant* ))) ) OR ( TITLE-ABS-KEY (maternal W/5 ("blood pressure" OR hypotensi* OR "heart rate*" OR bradycardia OR "cardiac output*" OR "blood flow" OR circulation OR "arter* flow" OR "oxygen saturation" OR "oxygen delivery" OR "peripheral resistance" OR "hemodynamic*" OR "diastolic OR "systolic" )) ) AND NOT TITLE-ABS-KEY (animal* OR cow OR cows OR bovine OR chicken* OR rat OR rats OR mouse OR mice OR rodent* OR sheep OR pig OR pigs OR swine OR dog OR dogs OR cat OR cats ) ) OR ( TITLE-ABS-KEY (exercis* W/5 position*) OR crunch OR crunches OR "sit up*" OR "situp*" OR "v-sit*" OR "bench press*" OR "shoulder bridge*" OR "abdominal bridge*" OR "hip raise*" OR "leg lift*" ) AND ( ( TITLE-ABS-KEY (pregnan* OR antenatal OR prenatal OR perinatal OR prepartum OR antepartum OR "pre partum" OR "ante partum" OR primigravid* OR primiparous OR multiparous OR multigravid* OR trimester* OR obstetric* OR gestation* OR fetus OR foetus OR fetal OR foetal OR birthweight OR "birth weight" OR "small for gestational age" OR sga OR "intrauterine growth restriction" OR iugr OR "pre-eclampsia*" OR preeclampsia* OR "umbilical blood flow" OR "umbilical artery* flow" OR "uterine blood flow" OR "uterine circulation" OR miscarriage OR stilbirth ) ) OR ( TITLE-ABS-KEY ((( premature OR preterm ) PRE/3 (birth* OR delivery OR labor OR infant* ))) ) OR ( TITLE-ABS-KEY (maternal W/5 ("blood pressure" OR hypotensi* OR "heart rate*" OR bradycardia OR "cardiac output*" OR "blood flow" OR circulation OR "arter* flow" OR "oxygen saturation" OR "oxygen delivery" OR "peripheral resistance" OR "hemodynamic*" OR "diastolic OR "systolic" )) )

WOS CORE

#1 TS=(exercise or "physical* activ*" or "strenuous activit*" or running or plyometric* or yoga or "tai chi" or "weight training" or "resistance training" or swim* or sport* or athlet* or walk or walking or mvp* or or stretching or "aerobic capacity" or fitness or (weight* near/2 lift*) or ((muscle or muscular or strength*) near/2 conditioning))

#2 TS=(pregnan* or antenatal or prenatal or perinatal or prepartum or antepartum or "pre partum" or "ante partum" or primigravid* or primiparous or multiparous or multigravid* or trimester* or obstetric* or gestation* or fetus or foetus or fetal or foetal or ((premature or preterm) near/3 (birth* OR delivery OR labor OR infant*)) OR birthweight or "birth weight" or "small for gestational age" or sga or "intrauterine growth restriction" or iugr or "pre-eclampsia*" or preeclampsia* or "umbilical blood flow" or "umbilical artery* flow" or "uterine blood flow" or "uterine circulation" or (maternal near/5 ("blood pressure" OR hypotensi* OR "heart rate*" or bradycardia or "cardiac output*" or "blood flow" or circulation OR "arter* flow" or "oxygen saturation")))

#3 #1 AND #2
#4 TS=(pregnan* or antenatal or prenatal or perinatal or prepartum or antepartum or "pre partum" or "ante partum" or primigravid* or primiparous or multiparous or multigravid* or trimester* or obstetric* or gestation* or fetus or foetus or fetal or foetal) AND TS=(complication* or death or mortality or morbidity or adverse)
#5 TS=(stillbirth or miscarriage)
#6 #4 OR #5
#7 #6 AND #1
#8 #3 OR #7
#9 TS=(supine or "left lateral" or reclin* or recumbent or ((lie or lying) near/2 (flat or down or horizontal*)) OR ((horizontal* or sleep* or rest* or body) near/2 position*) OR "standing position*" or "60 degree*" or "sixty degree" or "upright position*" or "left lateral" or "body position*")
#10 #8 AND #9
#11 TS=(exercis* near/5 position*) or crunch or crunches or "sit up*" or "situp*" or "v-sit*" or "bench press*" or "shoulder bridge*" or "abdominal bridge*" or "hip raise*" or "leg lift")
#12 #2 OR #6
#13 #11 AND #12
#14 #10 OR #13

Cochrane

#1 [mh Exercise] or [mh Athletes] or [mh "Exercise Movement Techniques"] or [mh "Physical Exertion"] or [mh "Exercise Therapy"] or [mh Sports] or [mh "Motor Activity"] or (exercise or "physical* activ*" or "strenuous activit*" or running or walk or walking or plyometric* or yoga or "tai chi" or "weight training" or "resistance training" or swim* or sport* or athlet* or mvpa or ltpa or stretching):ti,ab,kw or ((muscle or muscular or strength*) near/2 conditioning):ti,ab,kw or (weight* near/2 lift*):ti,ab,kw
#2 [mh Pregnancy] or [mh "Pregnancy Complications"] or [mh "Pregnancy Trimesters"] or [mh "Peripartum Period"] or (pregnan* or antenatal or prenatal or perinatal or prepartum or antepartum or "pre partum" or "ante partum" or trimester* or obstetric* or primigravid* or primiparous or multiparous or multigravid* or obstetric* or gestation* or pre-eclamps* or preeclamps* or "umbilical blood flow" or "umbilical arter* flow"):ti,ab,kw or ([mh Uterus] and [mh "Regional Blood Flow"]) or ("uterine blood flow" or "uterine circulation"):ti,ab,kw or (maternal near/5 ("blood pressure" or hypotensi* or "heart rate*" or bradycardia or "cardiac output*" or "stroke volume" or "blood flow" or circulation or "arter* flow" or "oxygen saturation" or "oxygen delivery" or "peripheral resistance" or diastolic or systolic)):ti,ab,kw or ((maternal):ti,ab,kw and [mh "Cardiac Output"])
#3 [mh Fetus] or [mh "Fetal Diseases"] or [mh "infant, low birth weight"] or [mh "infant, small for gestational age"] or [mh "infant, very low birth weight"] or [mh "infant, extremely low birth weight"] or [mh "infant, premature"] or [mh "infant, extremely premature"] or (fetus or foetus or fetal or foetal or ((premature or preterm) near/3 (birth* or delivery or labor or infant*)) or birthweight or birth weight or "small for gestational age" or sga or "intrauterine growth restriction" or iugr or stillbirth or miscarriage):ti,ab,kw
#4 #2 or #3
#5 #1 AND #4
TRIP

((title:(pregnant OR pregnancy fetus OR foetus OR fetal OR foetal) AND (exercise OR "physical activity") AND (supine OR horizontal OR recumbent OR "left lateral" OR crunch OR crunches OR "sit up*" OR "situp*" OR "v-sit*" OR "bench press*" OR "shoulder bridge*" OR "abdominal bridge*" OR "hip raise*" OR "leg lift*)) OR (shoulder bridge* OR "abdominal bridge*" OR "hip raise*" OR "leg lift*"))

Clinicaltrials.gov

Due to limits on number of characters entered into the search box, two separate search statements were entered:

(pregnant OR pregnancy fetus OR foetus OR fetal OR foetal) AND (exercise OR "physical activity") AND (supine OR horizontal OR recumbent OR "left lateral" OR crunch OR crunches OR "sit up*" OR "situp*" OR "v-sit*" OR "bench press*")

(pregnant OR pregnancy fetus OR foetus OR fetal OR foetal) AND ("shoulder bridge*" OR "abdominal bridge*" OR "hip raise*" OR "leg lift*" OR "exercise position*"
Online Supplement 2. List of Excluded studies (N=58).

Not Pregnant Women


No Supine Exercise


Outcomes Not Relevant


Duplicates

Online Supplement Table 1. Study characteristics of all reported studies.

<table>
<thead>
<tr>
<th>Author</th>
<th>Country</th>
<th>Type of Study</th>
<th>Sample size, n</th>
<th>Age, years (SD)</th>
<th>Gestational Age at study entry, weeks (SD)</th>
<th>Weight at study entry, kg (SD)</th>
<th>Pre-pregnancy BMI, kg/m² (calculated from paper)</th>
<th>Pre-intervention activity/fitness level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barakat et al. (1)</td>
<td>Spain</td>
<td>RCT</td>
<td>I: n=382, C: n=383</td>
<td>I: 31.6 (4.2), C: 31.8 (4.5)</td>
<td>All: 9 - 11</td>
<td>N/R</td>
<td>N/R</td>
<td>I: 16% (n=61) Active, 84% (n=321) Inactive C: 81.7% (n=313) Inactive, 18.3% (n=70) Active</td>
</tr>
<tr>
<td>Price et al. (2)</td>
<td>USA</td>
<td>RCT</td>
<td>I: n=31, C: n=31</td>
<td>I: 30.5 (5), C: 27.6 (7.3)</td>
<td>All: 12 – 14</td>
<td>N/R</td>
<td>N/R</td>
<td>All: Inactive before intervention.</td>
</tr>
<tr>
<td>Stafne et al. (3)</td>
<td>Norway</td>
<td>RCT</td>
<td>I: n=429, C: n=426</td>
<td>I: 30.5 (4.4), C: 30.4 (4.3)</td>
<td>All: 18 - 22</td>
<td>I: 70.4 (9.8), C: 70.8 (10.3)</td>
<td>N/R</td>
<td>In the intervention group, 228 exercised regularly and 60 exercised 3 times per week at moderate to high intensity</td>
</tr>
<tr>
<td>Avery et al. (4)</td>
<td>Canada</td>
<td>OBS</td>
<td>All: n=12 Participants were randomly assigned to the type of supine exercise and order of exercises performed (n=2</td>
<td>29 (1)</td>
<td>31</td>
<td>N/R</td>
<td>N/R</td>
<td>All: Not active before pregnancy. During pregnancy: Women did not participate in any strength training programs.</td>
</tr>
<tr>
<td>Study</td>
<td>Country</td>
<td>Study Type</td>
<td>Group 1: n</td>
<td>Group 2: n</td>
<td>Group 1: Mean (SD)</td>
<td>Group 2: Mean (SD)</td>
<td>BMI</td>
<td>Notes</td>
</tr>
<tr>
<td>-------</td>
<td>---------</td>
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<td>------------</td>
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<td>-------</td>
</tr>
<tr>
<td>Green et al. (5)</td>
<td>Australia</td>
<td>OBS</td>
<td>12</td>
<td>13</td>
<td>26.7 (1.8)</td>
<td>35 (1.6)</td>
<td>N/R</td>
<td>During pregnancy: Had been attending a series of routine hospital antenatal exercise classes including supine exercise for 4 to 8 visits and were deemed medically fit by health care provider.</td>
</tr>
<tr>
<td>Jeffreys et al. (6)</td>
<td>USA</td>
<td>OBS</td>
<td>14</td>
<td>3 (3)</td>
<td>31 (2)</td>
<td>20.7</td>
<td>N/R</td>
<td>During pregnancy: Physically active - had continued regular supine floor-based exercise beyond the 28th week; floor-based exercise 2 to 6 times per week; participated (3 to 6 times per week) in 30+ min of aerobics, running, kick boxing, yoga, or weight training at moderate to high intensity (rating of perceived exertion 13 to 17 on a 6-20 point scale).</td>
</tr>
<tr>
<td>Nesler et al. (7)</td>
<td>USA</td>
<td>OBS</td>
<td>12</td>
<td>13</td>
<td>26.7 (1.8)</td>
<td>35 (1.6)</td>
<td>N/R</td>
<td>During pregnancy: Healthy women enrolled in an ongoing pregnancy fitness program (YMCA prenatal exercise classes).</td>
</tr>
</tbody>
</table>

Note: BMI: body mass index; C control; DL: Double leg extension; I intervention; N/R: not reported; OBS: observational study; RCT: randomized controlled trial; (SD): standard deviation; SL: Single leg extension

Group 1 refers to 12 women measured at 24 to 28 weeks of pregnancy; Group 2 refers to 13 women measured at 32 to 36 weeks of pregnancy.
## Online Supplement – Table 2
Protocol description of randomized controlled trials that incorporated supine exercise in a structured exercise class.

<table>
<thead>
<tr>
<th>Author</th>
<th>Duration of intervention (weeks)</th>
<th>Control group description</th>
<th>Supine Exercise Protocol</th>
<th>Full Exercise Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Intensity</td>
<td>Time</td>
<td>Type</td>
</tr>
<tr>
<td>Barakat et al.(1)</td>
<td>27-30</td>
<td>Usual Care</td>
<td>3/week</td>
<td>12-14 on Borg’s Scale, &lt;70% Max HR</td>
</tr>
<tr>
<td>Price et al. (2)</td>
<td>22-24</td>
<td>Usual Care</td>
<td>1/week</td>
<td>12-14 on Borg’s scale</td>
</tr>
<tr>
<td>Stafne et al.(3)</td>
<td>12</td>
<td>Usual care</td>
<td>2-4/week</td>
<td>Moderate to high, 13-14 on Borg’s Scale</td>
</tr>
</tbody>
</table>
switch to a seated position if they felt discomfort.

(Diet Co-Intervention) Additionally, all participants received written recommendations for diet, pelvic floor muscle exercises and lumbo-pelvic pain due to pregnancy.

Note: HR: heart rate; N/R: Not reported.
**Online Supplement – Table 3.** Protocol description of the observational studies that included acute exercise in the supine position.

<table>
<thead>
<tr>
<th>Author</th>
<th>Baseline position, duration (minutes)</th>
<th>Baseline protocol</th>
<th>Exercise protocol</th>
<th>Post-exercise position, duration (minutes)</th>
<th>Post-exercise protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green et al.</td>
<td>Lateral, 10</td>
<td>Resting FHR tracing obtained throughout 10 minutes</td>
<td>N/R</td>
<td>35-40</td>
<td>Left-lateral, 10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>*Eight exercises in supine position were performed: A) With the hips and knees flexed, the pelvis was tilted moving the pubic symphysis towards the chest. The pubic symphysis was held in this position for 5 seconds then relaxed. This was repeated 10 times. B) Thighs were abducted and the knees flexed while keeping the feet together. C) Knees were kept together and flexed, twisting them to one side. D) Buttocks were pressed against the wall with the extended legs abducted on the wall. E) With the buttocks still against the wall, the feet were kept together on the wall and the knees flexed and abducted. F) Squatting position was adopted against the wall. G) Patient ‘sat’ on her feet with knees flexed. H) Knees were bent up together and taking 5 long slow breaths. The static exercises were maintained for five minutes with the exception of “F”, which most patients managed for only 3-4 minutes.</td>
<td>Lateral, 10</td>
<td>Resting FHR tracing obtained throughout 10 minutes.</td>
<td></td>
</tr>
<tr>
<td>Nesler et al.</td>
<td>Left-lateral, 20</td>
<td>Unclear when baseline measures FHR tracings were taken.</td>
<td>N/R</td>
<td>5</td>
<td>Left-lateral, 20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Abdominal strengthening exercises including pelvic tilts, pelvic tilt with curl, leg sliding, and flexion and extension of the foot. Unclear how outcomes were assessed.</td>
<td>Abdominal strengthening exercises including pelvic tilts, pelvic tilt with curl, leg sliding, and flexion and extension of the foot. Unclear how outcomes were assessed.</td>
<td>Left-lateral, 20 minutes after the supine exercise for unknown duration</td>
<td>Left-lateral rest position, and a final set of measurements was obtained after 2 minutes of recovery in that position.</td>
</tr>
<tr>
<td>Jeffreys et al.</td>
<td>TP1: Left-lateral, 5 TP2: Supine, 3</td>
<td>Maternal BP and HR measurements were begun and repeated at 2-minute intervals. FHR recorded before supine position. In supine maternal BP and HR were begun and repeated at 2-minute intervals. After 5</td>
<td>15 [Borg’s 6-20 scale] Range: 13 to 17 (moderate to very hard)</td>
<td>10</td>
<td>Left-lateral, 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The exercise sequence included 60- to 90-second intervals of abdominal crunches (flexion of the head, neck, and upper thorax on the trunk) alternating with 60–90 seconds of either leg lifts (flexion of extended legs on the trunk) or cycling motions (alternating thigh flexion and extension on the trunk) at a cadence of 60 moves per minute. Maternal blood pressure and heart rate measurements were begun at 3 minutes and repeated during each set of leg exercises and at</td>
<td>The exercise sequence included 60- to 90-second intervals of abdominal crunches (flexion of the head, neck, and upper thorax on the trunk) alternating with 60–90 seconds of either leg lifts (flexion of extended legs on the trunk) or cycling motions (alternating thigh flexion and extension on the trunk) at a cadence of 60 moves per minute. Maternal blood pressure and heart rate measurements were begun at 3 minutes and repeated during each set of leg exercises and at</td>
<td>Left-lateral, 2</td>
<td>Left-lateral rest position, and a final set of measurements was obtained after 2 minutes of recovery in that position.</td>
</tr>
</tbody>
</table>
minutes, duplicate estimates of volume flow through the ascending branch of the uterine artery were obtained at the same point in the vessel as those obtained at left-lateral rest. completion of the exercise. Duplicate volume flow estimates in the ascending branch of the right uterine artery were obtained at the same point in the vessel during a 10- to 20-second pause in the exercise at 5 minutes and again within 10–20 seconds of exercise cessation at 10 minutes. Then a brief measurement of fetal heart rate was obtained.

| Avery et al. (4) | N/R | Supine rest (30° up from supine) and rest in a seated position. | N/R | 3 sets of 10 reps of sub-maximal single leg extension and double leg extensions; performed at 30 degrees incline and in a seated position. Participants were randomized to the type and combination of exercises with 2 participants performing each possible combination in a supine and seated position. | N/R | N/R |

Note: *As recommended by Balaskas and Balaskas (28); TP – time point; BP – blood pressure; HR – heart rate; FHR – fetal heart rate; N/A Not applicable; N/R – not reported. Avery et al. (4) was included as an observational study as participants were randomized to the type and combination of exercise but not to a specific group.
**Online Supplement Table 4: The association between prenatal supine exercise (acute) and maternal outcomes.**

<table>
<thead>
<tr>
<th>Quality assessment</th>
<th>Nº of participants</th>
<th>Effect</th>
<th>Quality</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nº of studies</td>
<td>Study design</td>
<td>Risk of bias</td>
<td>Inconsistency</td>
<td>Indirectness</td>
</tr>
<tr>
<td>2</td>
<td>observational studies a</td>
<td>not serious</td>
<td>not serious</td>
<td>not serious</td>
</tr>
<tr>
<td>2</td>
<td>observational studies a</td>
<td>not serious</td>
<td>not serious</td>
<td>not serious</td>
</tr>
<tr>
<td>3</td>
<td>observational studies a</td>
<td>not serious</td>
<td>not serious</td>
<td>not serious</td>
</tr>
</tbody>
</table>

**Explanations**

a. Cohort study

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CI: Confidence interval; OR: Odds ratio
Online Supplement Table 5: The association between prenatal exercise that included supine exercise and small birth weight.

<table>
<thead>
<tr>
<th>No. of studies</th>
<th>Study design</th>
<th>Risk of bias</th>
<th>Inconsistency</th>
<th>Indirectness</th>
<th>Imprecision</th>
<th>Other considerations</th>
<th>Prenatal exercise that included supine exercise</th>
<th>No exercise</th>
<th>Relative (95% CI)</th>
<th>Absolute (95% CI)</th>
<th>Quality</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>randomized trials</td>
<td>serious a</td>
<td>serious b</td>
<td>not serious</td>
<td>not serious c</td>
<td>none</td>
<td>Narrative summary: Barakat et al. (2016) (1) reported no association between prenatal exercise (Intervention, n=382; Control, n=383) that included supine exercise and no exercise.</td>
<td>Pre</td>
<td>no exercise</td>
<td>(95% CI)</td>
<td>LOW</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>2</td>
<td>randomized trials</td>
<td>serious d</td>
<td>not serious</td>
<td>serious e</td>
<td>serious f</td>
<td>none</td>
<td>Narrative synthesis: Two studies were included (Intervention, n=460; Control, n=457). 2/2 studies found no association between prenatal exercise that included supine exercise and no exercise (2, 3).</td>
<td>Pre</td>
<td>no exercise</td>
<td>(95% CI)</td>
<td>VERY LOW</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>1</td>
<td>randomized trials</td>
<td>serious g</td>
<td>serious b</td>
<td>not serious</td>
<td>not serious c</td>
<td>none</td>
<td>Narrative summary: Price et al. (2012) (2) (Intervention, n=31; Control, n=31) reported no association between prenatal exercise that included supine exercise and no exercise.</td>
<td>Pre</td>
<td>no exercise</td>
<td>(95% CI)</td>
<td>LOW</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>1</td>
<td>randomized trials</td>
<td>serious h</td>
<td>serious b</td>
<td>serious i</td>
<td>not serious c</td>
<td>none</td>
<td>Narrative summary: Stafne et al. (2012) (3) (Intervention, n=429; Control, n=426) reported no association between prenatal exercise that included supine exercise and no exercise.</td>
<td>Pre</td>
<td>no exercise</td>
<td>(95% CI)</td>
<td>VERY LOW</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>1</td>
<td>observational studies</td>
<td>not serious</td>
<td>serious b</td>
<td>not serious</td>
<td>not serious c</td>
<td>none</td>
<td>Narrative summary: Green et al. (1988) reported one incident of small for gestational age (&lt;10th percentile) out of 26 women who engaged in supine exercise as part of a structured exercise class (5).</td>
<td>Pre</td>
<td>no exercise</td>
<td>(95% CI)</td>
<td>LOW</td>
<td>CRITICAL</td>
</tr>
</tbody>
</table>
CI: Confidence interval; OR: Odds ratio

Explanations

a. Serious risk of bias. High risk of performance bias (compliance to the supine exercise portion of the intervention classes was not reported). Unclear risk of selection bias; it was unclear if allocation was adequately concealed.

b. Serious inconsistency. Only one study was included.

c. No serious imprecision; only one study but already downgraded for serious inconsistency for this reason.

d. Serious risk of bias. Unclear detection bias (potentially flawed measurement of the outcome). High risk of performance bias (potentially flawed blinding methods and outcomes may be influenced by this; compliance to the supine exercise portion of the intervention classes were not reported or women were allowed to not complete the supine exercise portion if they chose), and attrition bias. Unclear risk of selection bias; it is unknown if allocation concealment was adequate.

e. Serious indirectness. Exercise-only interventions and exercise+co-interventions were combined for analysis.

f. Serious imprecision. The 95% CI crossed the line of no effect, and was wide, such that the interpretation of the data would be different if the true effect were at one end of the CI or the other.

g. Serious risk of bias. High risk of performance bias (compliance to the supine exercise portion of the intervention classes was not reported) and unclear detection bias (potentially flawed measurement of the outcome).

h. Serious risk of bias. High risk of performance bias (potentially flawed blinding methods and outcomes may be influenced by this; or women were allowed to not complete the supine exercise portion if they chose), and attrition bias. Unclear risk of selection bias; it is unknown if allocation concealment was adequate.
i. Serious indirectness. Exercise was combined with a co-intervention.

j. Cohort study
Online Supplement Table 6: The association between prenatal exercise that included supine exercise and intrauterine growth restriction.

<table>
<thead>
<tr>
<th>Quality assessment</th>
<th>No of participants</th>
<th>Effect</th>
<th>Quality</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of studies</td>
<td>Study design</td>
<td>Risk of bias</td>
<td>Inconsistency</td>
</tr>
<tr>
<td>Evidence from cohort studies: Association between structured exercise classes that included supine exercise and intrauterine growth restriction.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>observational studies</td>
<td>not serious</td>
<td>serious</td>
<td>not serious</td>
</tr>
</tbody>
</table>

CI: Confidence interval; OR: Odds ratio

**Explanations**

a. Serious inconsistency. Only one study was included.

b. No serious imprecision; only one study but already downgraded for serious inconsistency for this reason

c. Cohort study
Online Supplement Table 7: The association between prenatal exercise that included supine exercise and perinatal mortality.

<table>
<thead>
<tr>
<th>Quality assessment</th>
<th>№ of participants</th>
<th>Effect</th>
<th>Quality</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>№ of studies</td>
<td>Study design</td>
<td>Risk of bias</td>
<td>Inconsistency</td>
<td>Indirectness</td>
</tr>
<tr>
<td>1</td>
<td>observational studies</td>
<td>not serious</td>
<td>serious</td>
<td>not serious</td>
</tr>
</tbody>
</table>

CI: Confidence interval; OR: Odds ratio

Explanations

a. Cohort study.

b. Serious inconsistency. Only one study was included.

c. No serious imprecision; only one study but already downgraded for serious inconsistency for this reason.
Online Supplement Table 8: Association between prenatal supine exercise (acute) and uterine blood flow.

<table>
<thead>
<tr>
<th>Quality assessment</th>
<th>№ of participants</th>
<th>Effect</th>
<th>Quality</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>№ of studies</td>
<td>Study design</td>
<td>Risk of bias</td>
<td>Inconsistency</td>
<td>Indirectness</td>
</tr>
<tr>
<td>1</td>
<td>observational studies</td>
<td>not serious</td>
<td>serious</td>
<td>not serious</td>
</tr>
</tbody>
</table>

CI: Confidence interval; OR: Odds ratio

**Explanations**

a. Cohort study

a. Serious inconsistency. Only one study was included.

b. No serious imprecision; only one study but already downgraded for serious inconsistency for this reason
Online Supplement Table 9: Association between prenatal supine exercise (acute) and fetal heart rate.

<table>
<thead>
<tr>
<th>№ of studies</th>
<th>Study design</th>
<th>Risk of bias</th>
<th>Inconsistency</th>
<th>Indirectness</th>
<th>Imprecision</th>
<th>Other considerations</th>
<th>№ of participants</th>
<th>Effect</th>
<th>Quality</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>observational studies a</td>
<td>not serious</td>
<td>not serious</td>
<td>not serious</td>
<td>not serious</td>
<td>none</td>
<td>3</td>
<td>Narrative synthesis: Three studies were included (n=53). 1/3 studies showed a significant increase (6%) in mean fetal heart rate during supine exercise compared to left-lateral rest (6). 2/3 studies reported no statistical difference measured at rest compared to supine exercise (4, 5, 7).</td>
<td>⨁⨁◯◯</td>
<td>LOW</td>
</tr>
</tbody>
</table>

Evidence from cohort studies: Association between supine exercise and fetal bradycardia measured from before to during and after exercise.

<table>
<thead>
<tr>
<th>№ of studies</th>
<th>Study design</th>
<th>Risk of bias</th>
<th>Inconsistency</th>
<th>Indirectness</th>
<th>Imprecision</th>
<th>Other considerations</th>
<th>№ of participants</th>
<th>Effect</th>
<th>Quality</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>observational studies a</td>
<td>not serious</td>
<td>not serious</td>
<td>not serious</td>
<td>not serious</td>
<td>none</td>
<td>3</td>
<td>Narrative synthesis: Three studies were included (n=57). 3/3 studies reported one woman who showed fetal bradycardia at rest (4, 5, 7) 1/3 studies did not let the woman continue in the study so no assessment occurred during supine exercise (7). 1/3 studies reported two women who showed fetal bradycardia during supine exercise and 3 women who showed fetal bradycardia post supine exercise (4).</td>
<td>⨁⨁◯◯</td>
<td>LOW</td>
</tr>
</tbody>
</table>

Evidence from cohort studies: Association between supine exercise and abnormal fetal heart rate tracings (as reported by author) measured from before to during exercise.
<table>
<thead>
<tr>
<th>№ of studies</th>
<th>Study design</th>
<th>Risk of bias</th>
<th>Inconsistency</th>
<th>Indirectness</th>
<th>Imprecision</th>
<th>Other considerations</th>
<th>supine exercise</th>
<th>left-lateral rest</th>
<th>Relative (95% CI)</th>
<th>Absolute (95% CI)</th>
<th>Quality</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>observational studies a</td>
<td>not serious</td>
<td>not serious</td>
<td>not serious</td>
<td>none</td>
<td>Narrative synthesis: Three studies were included (n=65). 1/3 studies reported 12 (46%) out of 26 women had abnormal fetal heart rate tracings; 4 abnormal tracings occurred at rest; 3 out of 4 abnormal tracings continued during supine exercise; 8 abnormal tracings were found in those women who had normal tracings at rest when they engaged in supine exercise (5). 1/3 studies reported 5 (19%) out of 27 had abnormal FHR tracings and 2 of these women were dropped and not allowed to continue the supine exercise protocol; the 3 other women continued to have abnormal tracings during supine exercise (7). 1/3 studies reported 4 (33%) fetal events from 12 women during various types of supine exercise (4).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>🔽☐☐LOW</td>
</tr>
</tbody>
</table>

Cl: Confidence interval; OR: Odds ratio

Explanations

a. Cohort study
Included Studies: