Indicates a decrease ↓
Indicates an increase ↑
Indicates no/mild effects →

Supplementary table 1: Study selection

Author	*Year*	*n*	*Physical activity*	*Population*	*Maternal BMI (mean)*	*Maternal age (mean)*	*Gestational Age (GA)*	*Effects/Conclusion*
Brik et al.[1]	2019	Exercise group: 42; Control group: 43	Aerobic (supervised)	healthy pregnant women with uncomplicated singleton pregnancy, previously sedentary women	BMI (pre-pregnancy): Exercise group: 23.4± 3.6; Control group: 24.3 ± 5.3	Exercise group: 33.4 ± 3.2; Control group: 32.7 ± 4.4	<16 weeks of GA	Increased ductus arteriosus pulsatility index (DA-PI) at 20 weeks and the ejection fraction (EF) at 36 weeks in the exercise compared with the control group
Melo et al.[2]	2019	88	Walking	pregnant women with uncomplicated singleton pregnancy, sedentary women	BMI (at 36 week of GA): 28.1 ± 4	25 ± 6	13, 20, 28, 36	↓ mean number of fetal movements ↓ in FHR during exercise
Sletten et al.[3]	2018	48	Every type of PA	healthy pregnant women with uncomplicated pregnancy	BMI (pre-pregnancy): range 19.5 ± 45.7	Range 21-38	24, 28, 32, 36	↑ diversity of FHR rhythm at 32 and 36 weeks of GA in the less active group
Santos et al.[4]	2016	28	Treadmill (running on treadmill until volitional fatigue)	healthy pregnant women with uncomplicated singleton pregnancy, previously sedentary women	BMI : 23.7 ± 3.2)	26 ± 6.9	30.51 ± 3.3	No significant effect after exercise on cardiotocography and biophysical profile of the fetus however significantly reduced resistance and pulsatility indices and fetal biophysical profile
Onoyama et al.[5]	2016	373	Five different types/groups of PA	singleton, full-term pregnancies	*NA*	30.3 ± 5.9	*NA*	→ no significant effects in fetal parameters, mild effects in cord blood (cellular level)
Bgeginski et al.[6]	2015	10	Resistance exercise	Healthy women, not practicing regular exercise in the last three months	*NA*	25.2 ± 4.4	22-24, 28-32, 34-36	→ no significant effects on fetal parameters

Indicates a decrease ↓
Indicates an increase ↑
Indicates no/mild effects →

Supplementary table 1: Study selection

Author	*Year*	*n*	*Physical activity*	*Population*	*Maternal BMI (mean)*	*Maternal age (mean)*	*Gestational Age (GA)*	*Effects/Conclusion*
Sechrist et al.[7]	2015	Exercise Group: 19 ; Control Group: 12	Aquatic Exercise (AE) (heated, indoor pool)	high risk pregnancies, singleton pregnancies and twin births	*NA*	18-45	*NA*	↑ significant increase in the AE group and control group for the change in mean amniotic fluid index (AFI) measurements values
May et al.[8]	2014	40	Aerobic (walking jogging, yoga, weight lifting)	healthy pregnant women with uncomplicated singleton pregnancy	BMI: 29.2	29.2	33-36	significant correlation between minutes of non-continuous leisure time physical activity with fetal overall HRV
van Leeuwen et al.[9]	2014	Exercise group: 21; Control group: 19	Self-managed aerobic exercises (minimum 3 times per week throughout pregnancy)	healthy pregnant women with uncomplicated singleton pregnancy	*NA*	20-35	36	→ fetal-maternal heart rate coupling is generally weak in exercising mothers
Gustafson et al.[10]	2014	Exercise group: 16; Control group: 27	Aerobic (Visits at 28, 32, 36 weeks of gestation and 1 month follow up)	highly active women, healthy pregnant women with uncomplicated singleton pregnancy	*NA*	20-35	less than 28 GA until one month of age	↑ significantly higher short-term HRV (RMSSD, LF, HF) at one month age
de Oliveria Melo et al.[11]	2012	Group A: 62 Group B: 63 Control group: 62	Moderate-intensity walking	healthy women	Group A: 24.7 ± 4.3; Group B: 23.4 ± 3.8; Group C: 23.5 ± 3.5	Group A: 24 ± 5.8; Group B: 26 ± 5.3; Group C: 24 ± 5.4	13 GA until term	→ no significant effects in fetal parameters (14 cases of preeclampsia occurred (Group A: n=3; Group B: n=6; Group C: n=5))
Jukic et al.[12]	2012	1647 births	Activity included: recreational, occupational, household, and child/adult care	*NA*	BMI: <18.5= 28 (n); 18.5-24.9= 977 (n); 25-29.9= 353 (n); ≥ 30= 261 (n)	≤ 24 years: 202; 25-29 years: 592; 30-34 years: 584; 35-39: 248; ≥40 years: 21	recruited before 10 GA	→ mild reduced risk of preterm birth with first-trimester vigorous recreational activity.

Indicates a decrease ↓
Indicates an increase ↑
Indicates no/mild effects →

Supplementary table 1: Study selection

Author	*Year*	*n*	*Physical activity*	*Population*	*Maternal BMI (mean)*	*Maternal age (mean)*	*Gestational Age (GA)*	*Effects/Conclusion*
May et al.[13]	2012	50	Aerobic (walking, jogging); Anaerobic (weight lifting, yoga etc.); all leisure time activities	healthy pregnant women with uncomplicated singleton pregnancy	BMI (pre-pregnancy): 21 (self-reported)	23-39	36	Significant correlation between duration of PA and all fetal HRV measures
Owe et al.[14]	2012	61.098	Different types of PA were investigated through questionnaire	singleton pregnancy	*NA*	*NA*	17 GA until birth	↓ reduced preterm births ↑ slightly increased post term births.
Szymanski et al.[15]	2012	45 (3 groups according to self-reported physical activity)	Treadmill	healthy women	*NA*	1) 32.9; 2) 34.3; 3) 32.9	28 to 32	↓ fetal heart rate in the highly active group was lower than the other groups → alterations in umbilical cord blood and uterine artery Dopplers
Tomic et al.[16]	2012	166	Aerobic	healthy women, age between 18-35 years	BMI (pre-pregnancy): 23.1 ± 4.1	28	6 to 8	↑ gestational diabetes significantly more frequently in the control than in the exercise group ↓ women in exercise group showed lower occurrence of fetal macrosomia
Fleten et al.[17]	2010	43.705	Different types of PA	healthy pregnant women with uncomplicated singleton pregnancy	BMI (pre-pregnancy): 24 ± 4.3	15-23 (y) = 5.642 (n); 25-29 (y)= 15.854 (n); 30-34 (y) = 16.227 (n); 35-39 (y) = 5.408; 40-49 (y) = 574	17 GA until term	→ Exercise during pregnancy has a minor impact on birth weight whereas maternal pre-pregnancy BMI has a larger influence

Indicates a decrease ↓
Indicates an increase ↑
Indicates no/mild effects →

Supplementary table 1: Study selection

Author	*Year*	*n*	*Physical activity*	*Population*	*Maternal BMI (mean)*	*Maternal age (mean)*	*Gestational Age (GA)*	*Effects/Conclusion*
Juhl et al.[18]	2010	79.692	Different types of PA	*NA*	BMI (pre-pregnancy): <18=54.5 (%); 18.5 to <25 = 68 (%); 25 to <30 = 19 (%); 30+ = 8 (%)	>25 = 13%; 25 to <35 = 75%; 35 to <40 = 10%; 40+ = 1%	16-31	↓ risk of having a baby small for gestational age and large for gestational age
May et al.[19]	2010	Exercise group: 26; Control group: 35	Aerobic (self-reported)	healthy pregnant women with uncomplicated singleton pregnancy, highly active women	BMI: Exercise group: 22.8 ± 2.6; Control group: 25.2 ± 4.6	20-35	28-36	The effect of exercise on fetal HR depends on GA and fetal activity state ↓ lower FHR during active fetal state (36 GA) ↑ increased fetal HRV during active fetal state (36 GA)
Melzer et al.[20]	2010	44	Different types of PA	healthy women	BMI (pre-pregnancy): Exercise group = 22.8 ± 4.2; Control group = 22.8 ± 3.5	Exercise group: 31.5 ± 5.4 Control group: 30.5 ± 5.8	35-41	→ no significant effects in fetal parameters
Silveira et al.[21]	2010	133	Water Aerobics in a heated pool (25-30°)	healthy pregnant women with uncomplicated singleton pregnancy, gestational age ≤ 24 weeks, previously sedentary women	*NA*	19-35	24-27, 28-31, 32-35, 36-39	↑ HRV was significantly greater following exercise (24-27 GA)
Barakat et al.[22]	2008	160	Aerobic	healthy pregnant women with uncomplicated singleton pregnancy,	BMI (Exercise group): 24.3; BMI (Control group): 23.4	25-35 (Exercise group: 30.4; Control group: 29.5)	*NA*	→ no significant effects in fetal parameters

Indicates a decrease ↓
Indicates an increase ↑
Indicates no/mild effects →

Supplementary table 1: Study selection

Author	Year	n	Physical activity	Population	Maternal BMI (mean)	Maternal age (mean)	Gestational Age (GA)	Effects/Conclusion
				previously sedentary women				
Clapp et al.[23]	2002	75	Running, Aerobic and Stair-stepper	singleton pregnancy, active women	*NA*	31 ± 1 (Group 1: Lo-Hi), 30 ± 1 (Group 2: Mod-Mod) and 32 ± 1 (Group 3: Hi-Lo)	from 8 GA until term	↓ significant decrease in newborns' weight and height in the exercise groups (Group 1 and Group 2) ↑ mid-trimester growth rates were significantly greater (Group 2 and 3)
Kennelly et al.[24]	2002	Entire group: 258; Control group: 112; Mild exercise: 119; Moderate exercise:27	Cycle Ergometer + 30-degree semi-recumbent couch	singleton pregnancy, primiparous	BMI: 28.1 ± 4.1	27 ± 5.5	33-38	→ no significant effects in fetal parameters
Clapp III et al.[25]	2000	46	weight-bearing exercise, treadmill, stair stepper	singleton pregnancy, previously sedentary women	*NA*	31 ± 1	16, 20, 24	↑ weight-bearing exercise (moderate, early pregnancy) is associated with a significant increase in fetoplacental growth in normal pregnancy
MacPhail et al.[26]	2000	23	Cycle Ergometer	singleton pregnancy, active women	BMI: 28 ± 2.6	20-40	31-38 (mean 35 ± 1.6 weeks)	↓ significantly fewer accelerations in the second post-test 10-minutes segment compared with the second pre-test 10-minutes segment ↑ baseline FHR in the 20-minutes post-test period compared with the 20-minutes pre-test period

Indicates a decrease ↓
Indicates an increase ↑
Indicates no/mild effects →

Supplementary table 1: Study selection

Author	*Year*	*n*	*Physical activity*	*Population*	*Maternal BMI (mean)*	*Maternal age (mean)*	*Gestational Age (GA)*	*Effects/Conclusion*
								↓ HRV in both post-tests periods compared with the first 10-minutes pre-test period
Rafla et al.[27]	1999	low risk group: 193; high risk group: 44	Cycle Ergometer	*NA*	*NA*	16-38	31-38	↓ in younger mothers (16-24) significantly lower FHR than in those aged 25-38 years ↓ lower FHR in women who exercised with an intensity of 55-75% submaximal exercise than those exercising at 76%-90% ↓ athletes had fetuses with significantly lower fetal heart rates than those less active
Brenner et al.[28]	1999	Exercise group: 14; Control group: 6	Cycle Ergometer	Healthy, previously sedentary women		Exercise group: 28.7 ± 3.5; Control group: 29.3 ± 3.2	Entry: Exercise group: 16.4 ± 4.1 and Control group: 18.8 ± 3.5; Study time points: 17, 27, 30	↑ increase in FHR during exercise ↓ FHR post-exercise ↑ FHR in recovery period

Indicates a decrease ↓
Indicates an increase ↑
Indicates no/mild effects →

Supplementary table 1: Study selection

Author	*Year*	*n*	*Physical activity*	*Population*	*Maternal BMI (mean)*	*Maternal age (mean)*	*Gestational Age (GA)*	*Effects/Conclusion*
Avery et al.[29]	1999	Exercise group: 12 Control group: 12 non-pregnant women	Strength Conditioning Exercise	*NA*	Weight: Exercise group =70 ± 3; Control group = 62 ± 2; pre-pregnancy BMI: Exercise group: 58 ± 2 ; Control group: *NA*	Exercise group: 29 ± 1; Control group: 29 ± 2	31 ± 1	↑ significant increase for the frequency of FHR accelerations from rest to the sitting posture compared to the control group
Manders et al.[30]	1997	12	Bicycle	*NA*	*NA*	20-36	29-32	↑ basal FHR was significantly increased for 30 minutes ↓ significantly lower incidence of body movements was found for the first 5 minutes following exercise
Spinnewijn et al.[31]	1996	26	Cycle Ergometer	healthy pregnant women with uncomplicated singleton pregnancy	*NA*	23-37	38-42	↑ uterine activity during the exercise period
Clapp III et al.[32]	1995	Exercise group: 31; Control group: 29	Running, Aerobic, Stair stepping, Biking, Swimming	healthy pregnant women with uncomplicated singleton pregnancy, highly active women	*NA*	31 ± 1	36-38	→ decrease in gestational length, birth weight and pregnancy weight gain in the continued exercise group

Indicates a decrease ↓
Indicates an increase ↑
Indicates no/mild effects →

Supplementary table 1: Study selection

Author	*Year*	*n*	*Physical activity*	*Population*	*Maternal BMI (mean)*	*Maternal age (mean)*	*Gestational Age (GA)*	*Effects/Conclusion*
Jackson et al.[33]	1995	60 (Exercise continued group (EX CONT)= 20; Exercise early only group (EX EARLY)=20; Control group (CON)=20)	All types of PA	highly active women	*NA*	*NA*	whole pregnancy and 6 months prior (activities were recorded by self-reports)	↑ significantly greater placental mass per kg of birth weight in the exercise group compared to the other two groups ↑ functional parenchymal tissue and the villous vessel diameters were significantly increased in the EX EARLY group
McMurray et al.[34]	1995	Exercise group: aerobic dance; Control group: treadmill walking	Treadmill and aerobic dance	healthy pregnant women with uncomplicated singleton pregnancy	*NA*	32 ± 5	21-28	↑ FHR significantly higher during the aerobic exercise than compared to the treadmill
Winn et al.[35]	1994	12	Treadmill	healthy pregnant women with uncomplicated singleton pregnancy, active women	*NA*	32	26-36	↓ fetal body movements and fetal breathing after exercise
Webb et al.[36]	1993	Exercise group: 22; Control group: 16	Cycle Ergometer	healthy pregnant women with uncomplicated singleton pregnancy, sedentary women	*NA*	Exercise Group: 30.2 ± 0.9; Control Group: 29.1 ± 0.9	16-38	↑ mean FHR baseline were 3-7 beats/min higher post-exercise compared with those pre-exercise
van Doorn et al.[37]	1992	33	Cycle Ergometer	healthy pregnant women with uncomplicated singleton pregnancy	*NA*		16, 25, 35 and 7 weeks postpartum	↑ mean FHR during first 5 minutes after exercise in first trimester

Indicates a decrease ↓
Indicates an increase ↑
Indicates no/mild effects →

Supplementary table 1: Study selection

Author	*Year*	*n*	*Physical activity*	*Population*	*Maternal BMI (mean)*	*Maternal age (mean)*	*Gestational Age (GA)*	*Effects/Conclusion*
Rafla et al. [38]	1991	21	Cycle Ergometer	nulliparous, healthy women	*NA*	*NA*	28-37	Maternal heart rate increased significantly and umbilical artery waveforms revealed a significant decrease in the S/D value following the period of exercise
Watson et al.[39]	1991	13	Swimming and cycling	healthy pregnant women with uncomplicated singleton pregnancy	*NA*	30	25-35	Slightly decrease in FHR immediately after exercise followed by an increase in FHR (10-20 minutes after exercise) → trend towards bigger change from baseline FHR after cycling compared to swimming
Green et al.[40]	1988	26	Exercises recommended by Balaskas and Balaskas (1979)	pregnant women with uncomplicated pregnancy	*NA*	*NA*	36-40	Unusually high incidence of obstetric pathology
Carpenter et al.[41]	1988	45	Cycle Ergometer	pregnant women with uncomplicated pregnancy, mixture of non-active and active women	*NA*	29.2 ± 3.7	25.2 ± 3.7	Maximal exertion is followed by fetal bradycardia whereas submaximal physical activity has no effect on the fetus
Steegers et al.[42]	1988	20	Treadmill	healthy pregnant women with uncomplicated singleton pregnancy, sedentary women	*NA*	25 ± 4	34 ± 2	↑ few minutes after exercise the fetal heart rate showed a statistically significant increase of 7 beats per minute (bpm)

Indicates a decrease ↓
Indicates an increase ↑
Indicates no/mild effects →

Supplementary table 1: Study selection

Author	*Year*	*n*	*Physical activity*	*Population*	*Maternal BMI (mean)*	*Maternal age (mean)*	*Gestational Age (GA)*	*Effects/Conclusion*
Katz et al.[43]	1988	12	Water Aerobic (30 ± 2°)	Previously sedentary women	*NA*	29.5	15, 25, 35	↑ resting FHR at 15 weeks was significantly greater than the resting in 25 and 35 GA ↑ gross fetal body movements, fetal limb movements and foetal breathing motion
Clapp III et al.[44]	1984	336 (3 groups based on their activity levels)	Running, aerobic dance, cross-country skiing	All kind of activity levels (self-report)	*NA*	27.6 ± 0.3	28-34	↓ gestational length in the exercising group who continued exercising until term
Collings et al.[45]	1983	Exercise group: 12; Control group: 8	Cycle Ergometer	healthy women	*NA*	*NA*	22.5 (mean) 34.2 (mean)	↑ 5 minutes after exercise FHR were significantly greater than pre-exercise FHR ↑ small but significant rise in fetal heart rate during exercise
Sibley et al.[46]	1981	Exercise group: 7; Control group: 6	Swimming	healthy women, singleton pregnancy	*NA*	Experimental group: 26.4 ± 4.7; Control group: 24.3 ± 1.4	13-26 (at start of exercising) Experimental group: GA (mean): 21.7 ± 2.6; Control group (mean): 22.2 ± 2.1	→ no effects in fetal parameters

Indicates a decrease ↓
Indicates an increase ↑
Indicates no/mild effects →

Supplementary table 1: Study selection

Author	*Year*	*n*	*Physical activity*	*Population*	*Maternal BMI (mean)*	*Maternal age (mean)*	*Gestational Age (GA)*	*Effects/Conclusion*
Pomerance et al. [47]	1974	54	Cycle Ergometer	healthy pregnant women with uncomplicated singleton pregnancy	*NA*	17-26	35-37	→ no effects in fetal parameters
								Elite athletes
Pivarnik et al.[48]	2016	45; 1.Control group 2. Regularly active women 3. Highly active women	Treadmill	healthy women (elite athletes)	*NA*	1) 32.9; 2) 34.3; 3) 32.9	28 to 32	↓ post-exercise fetal heart rate in the highly active was lower than in the other groups → alterations in umbilical cord blood and uterine artery Doppler immediately post-exercise
Salvesen et al.[49]	2011	6	Treadmill	healthy women (athletes) (Norwegian national team in endurance events)	BMI: 20 ± 3.2	28-37	23-29	Exercise at intensity above 90% of maximum maternal heart rate may induce fetal bradycardia ↓ Mean uterine artery volume blood flow was reduced by 25-60% during intensive exercise
Kardel et al.[50]	2005	42 (high intensity (HEG) and medium intensity group (MEG))	Strength, Running, Interval	healthy women (well-trained)	*NA*	HEG: 28.8; MEG: 26.7	<20 GA	higher level of exercise correlated with significantly earlier onset of labour for those women who gave birth to girls but not for those who gave birth to boys

Indicates a decrease ↓
Indicates an increase ↑
Indicates no/mild effects →

Supplementary table 1: Study selection

Author	*Year*	*n*	*Physical activity*	*Population*	*Maternal BMI (mean)*	*Maternal age (mean)*	*Gestational Age (GA)*	*Effects/Conclusion*
								Relaxation Intervention
García González et al.[51]	2017	Exercise group: 204; Control group: 205	Music	healthy pregnant women with uncomplicated singleton pregnancy, third trimester	*NA*	Exercise group: 31.85 ± 5.04; Control group: 30.90 ± 5.26	28	↑ FHR and fetal reactivity
Babbar et al.[52]	2016	52 Exercise group: 28; Control group: 24)	Yoga: 23 postures	healthy women	BMI: Experimental group=26.5 ± 6.1; Control group= 25.1 ± 6.7	Experi-mental group=25.5 ± 4.4; Control group=25.4 ± 4.6	28-36	→ no effects in fetal parameters
Nwebube et al.[53]	2017	111	Music: 12 weeks intervention, 20 mins a day listening to music	healthy women	*NA*	at least 18 years old	*NA*	→ no effects in fetal parameters
Gebuza et al.[54]	2016	60	15 minutes music stimulation with Wolfgang Amadeus Mozart`s "Turkish March" and Johann Strauss' "Tritsch-Tratsch Polka"	healthy women	*NA*	*NA*	27-41	↑ significant increase in fetal movements ↓ baseline cardiac activity and low variability significantly decreased ↓ number of uterine contractions decreased significantly

Indicates a decrease ↓
Indicates an increase ↑
Indicates no/mild effects →

Supplementary table 1: Study selection

Author	*Year*	*n*	*Physical activity*	*Population*	*Maternal BMI (mean)*	*Maternal age (mean)*	*Gestational Age (GA)*	*Effects/Conclusion*
Polis et al.[55]	2015	25	Yoga: one-on-one yoga session, 26 yoga postures selected for this study area group of standard postures found in a typical yoga class (standing, sitting, and supine positioning and incorporated twisting, balancing, bending, and stretching)	healthy women with or without yoga experiences (10 = regular yoga; 8 = familiar with yoga; 7 = no yoga experience)	BMI: 23.3 ± 64.1	31.7 ± 3.1	35-37	→ no effects in fetal parameters
Chuang et al.[56]	2012	Exercise group: 68; Control group: 59	13-minutes relaxation audio program for experimental group (progressive muscle relaxation); only routine prenatal care for control group	healthy women diagnosed with preterm labour, singleton pregnancy, hospitalized at time of entry into the study, gestational age between 20-34 and having a cervical dilatation of less than 3 cm	*NA*	Control group: 30.37; Exercise group: 31.72	20-34	→ no effects in fetal parameters
Fink et al.[57]	2011	33	Progressive Muscle Relaxation (PMR), Guided imagery (GI) and Control group (CG)	healthy women	*NA*	PMR group: 33.1; GI group: 34.1; CG group: 33	PMR group: 32.5; GI group: 32.3; CG group: 33	↑ control group had more FHR acceleration ↑ significantly more uterine activity (PMR group) than women in the GI group

Indicates a decrease ↓
Indicates an increase ↑
Indicates no/mild effects →

Supplementary table 1: Study selection

Author	*Year*	*n*	*Physical activity*	*Population*	*Maternal BMI (mean)*	*Maternal age (mean)*	*Gestational Age (GA)*	*Effects/Conclusion*
Chuntharapat et al.[58]	2008	74	Yoga: six 1-hour sessions	non-yoga-experienced healthy Thai women, primiparous	*NA*	18-35	26-37	Experimental group had a shorter duration of the first stage of labour, as well as the total time of labour
DiPietro et al.[59]	2008	100	18 minutes guided imagery relaxation and 18 minutes post-relaxation period	healthy women (gestational diabetes and anemis not excluded)	Weight: 67.1 kg; Height: 1.63m	31.1	32	↓ cortisol declined significantly over time ↓ decline in fetal motor activity ↑ increase in FHRV ↓ lower umbilical and uterine artery resistance
Narendran et al.[60]	2005	Exercise group: 169; Control group: 166	Yoga: Experimental Group: Physical postures (asanas), breathing techniques and meditation; Control group: walking 30 minutes twice a day	healthy women	Weight: Experimental group = 54.37; Control group = 53.14	Experi-mental group: 26; Control group: 26.5	18-20	↑ birth weight >2500 grams was significantly higher ↓ preterm labour was significantly lower in the yoga group ↓ complications such as IUGR was significantly lower in the yoga group

REFERENCES

1 Brik M, Fernández-Buhigas I, Martin-Arias A, et al. Does exercise during pregnancy impact on maternal weight gain and fetal cardiac function? A randomized controlled trial. *Ultrasound Obstet Gynecol* 2019;53(5):583–89.
2 Oliveira Melo AS, Pinto e Silva JL, de Oliveira Melo F, Barros ES, Santos HL, Amorim MMR, Souza ASR. Is Moderate Intensity Exercise during Pregnancy Safe for the Fetus? An Open Clinical Trial. *Rev Bras Ginecol Obstet* 2019(9 (41)):531–38.
3 Sletten J, Cornelissen G, Assmus J, Kiserud T, Albrechtsen A, Kessler J. Maternal exercise, season and sex modify the daily fetal heart rate rhythm. *Acta Physiologica* 2018(224).
4 Santos CMD, Santos WMD, Gallarreta FMP, et al. Effect of maternal exercises on biophysical fetal and maternal parameters: A transversal study. *Einstein (Sao Paulo)* 2016;14(4):455–60.
5 Onoyama S, Qiu L, Low HP, et al. Prenatal Maternal Physical Activity and Stem Cells in Umbilical Cord Blood. *Med Sci Sports Exerc* 2016;48(1):82–89.
6 Bgeginski R, Almada BP, Martins Kruel LF. Cardiorespiratory responses of pregnant and nonpregnant women during resistance exercise. *J Strength Cond Res* 2015;29(3):596–603.
7 Sechrist DM, Tiongco CG, Whisner SM, et al. Physiological Effects of Aquatic Exercise in Pregnant Women on Bed Rest. *Occup Ther Health Care* 2015;29(3):330–39.
8 May LE, Suminski RR, Berry A, Langaker MD, Gustafson KM. Maternal physical activity mode and fetal heart outcome. *Early Human Development* 2014(90):365–69.
9 van Leeuwen P, Gustafson KM, Cysarz D, et al. Aerobic exercise during pregnancy and presence of fetal-maternal heart rate synchronization. *PLoS One* 2014;9(8):e106036.
10 May LE, Scholtz SA, Suminski R, Gustafson KM. Aerobic exercise during pregnancy influences infant heart rate variability at one month of age. *Early Human Development* 2014(90):33–38.
11 Oliveria Melo AS de, Silva JLP, Tavares JS, et al. Effect of a physical exercise program during pregnancy on uteroplacental and fetal blood flow and fetal growth: A randomized controlled trial. *Obstet Gynecol* 2012;120(2 Pt 1):302–10.
12 Jukic AMZ, Evenson KR, Daniels JL, et al. A prospective study of the association between vigorous physical activity during pregnancy and length of gestation and birthweight. *Matern Child Health J* 2012;16(5):1031–44.
13 May LE, Suminski RR, Langaker MD, Yeh H, Gustafson KM. Regular maternal exercise dose and fetal heart outcome. *Med Sci Sports Exerc* 2012;44(7):1252–58.
14 Owe KM, Nystad W, Skjaerven R, et al. Exercise during pregnancy and the gestational age distribution: A cohort study. *Med Sci Sports Exerc* 2012;44(6):1067–74.
15 Szymanski LM, Satin AJ. Strenuous exercise during pregnancy: Is there a limit? *Am J Obstet Gynecol* 2012;207(3):179.e1-6.

16 Tomic V, Sporis G, Tomic J, et al. The effect of maternal exercise during pregnancy on abnormal fetal growth. *Croat Med J* 2013;54(4):362–68.
17 Fleten C, Stigum H, Magnus P, et al. Exercise during pregnancy, maternal prepregnancy body mass index, and birth weight. *Obstet Gynecol* 2010;115(2 Pt 1):331–37.
18 Juhl M, Olsen J, Andersen PK, et al. Physical exercise during pregnancy and fetal growth measures: A study within the Danish National Birth Cohort. *Am J Obstet Gynecol* 2010;202(1):63.e1-8.
19 May LE, Glaros A, Yeh H, Clapp III JF, Gustafson KM. Aerobic exercise during pregnancy influences fetal cardiac autonomic control of heart rate and heart rate variability. *Early Human Development*;2010(86):213–17.
20 Melzer K, Schutz Y, Soehnchen N, et al. Effects of recommended levels of physical activity on pregnancy outcomes. *Am J Obstet Gynecol* 2010;202(3):266.e1-6.
21 Silveira C, Pereira BG, Cecatti JG, et al. Fetal cardiotocography before and after water aerobics during pregnancy. *Reprod Health* 2010;7:23.
22 Barakat R, Stirling JR, Lucia A. Does exercise training during pregnancy affect gestational age? A randomised controlled trial. *Br J Sports Med* 2008;42(8):674–78.
23 Clapp JF, Kim H, Burciu B, et al. Continuing regular exercise during pregnancy: Effect of exercise volume on fetoplacental growth. *Am J Obstet Gynecol* 2002;186(1):142–47.
24 Kennelly MM, McCaffrey N, McLoughlin P, et al. Fetal heart rate response to strenuous maternal exercise: Not a predictor of fetal distress. *Am J Obstet Gynecol* 2002;187(3):811–16.
25 Clapp JF3, Kim H, Burciu B, et al. Beginning regular exercise in early pregnancy: Effect on fetoplacental growth. *Am J Obstet Gynecol* 2000;183(6):1484–88.
26 MacPhail A, Davies GA, Victory R, et al. Maximal exercise testing in late gestation: Fetal responses. *Obstet Gynecol* 2000;96(4):565–70.
27 Rafla NM, Cook JR. The effect of maternal exercise on fetal heart rate. *J Obstet Gynaecol* 1999;19(4):381–84.
28 Brenner IK, Wolfe LA, Monga M, et al. Physical conditioning effects on fetal heart rate responses to graded maternal exercise. *Med Sci Sports Exerc* 1999;31(6):792–99.
29 Avery ND, Stocking KD, Tranmer JE, et al. Fetal responses to maternal strength conditioning exercises in late gestation. *Can J Appl Physiol* 1999;24(4):362–76.
30 Manders MA, Sonder GJ, Mulder EJ, et al. The effects of maternal exercise on fetal heart rate and movement patterns. *Early Human Development* 1997;48(3):237–47.
31 Spinnewijn WE, Lotgering FK, Struijk PC, et al. Fetal heart rate and uterine contractility during maternal exercise at term. *Am J Obstet Gynecol* 1996;174(1 Pt 1):43–48.

32 Clapp JF3, Little KD, Appleby-Wineberg SK, et al. The effect of regular maternal exercise on erythropoietin in cord blood and amniotic fluid. *Am J Obstet Gynecol* 1995;172(5):1445–51.
33 Jackson MR, Gott P, Lye SJ, et al. The effects of maternal aerobic exercise on human placental development: Placental volumetric composition and surface areas. *Placenta* 1995;16(2):179–91.
34 McMurray RG, Katz VL, Poe MP, et al. Maternal and fetal responses to low-impact aerobic dance. *Am J Perinatol* 1995;12(4):282–85.
35 Winn HN, Hess O, Goldstein I, et al. Fetal responses to maternal exercise: effect on fetal breathing and body movement. *Am J Perinatol* 1994;11(4):263–66.
36 Webb KA, Wolfe LA, McGrath MJ. Effects of acute and chronic maternal exercise on fetal heart rate. *J Appl Physiol (1985)* 1994;77(5):2207–13.
37 van Doorn MB, Lotgering FK, Struijk PC, et al. Maternal and fetal cardiovascular responses to strenuous bicycle exercise. *Am J Obstet Gynecol* 1992;166(3):854–59.
38 Rafla NM, Beazely JM. The effect of maternal exercise on fetal umbilical artery waveforms. *Eur J Obstet Gynecol Reprod Biol* 1991;40(2):119–22.
39 Watson WJ, Katz VL, Hackney AC, et al. Fetal responses to maximal swimming and cycling exercise during pregnancy. *Obstet Gynecol* 1991;77(3):382–86.
40 Green RC, Schneider K, MacLennan AH. The fetal heart response to static antenatal exercises in the supine position. *Aust J Physiother* 1988;34(1):3–7.
41 Carpenter MW, Sady SP, Hoegsberg B, et al. Fetal heart rate response to maternal exertion. *JAMA* 1988;259(20):3006–09.
42 Steegers EA, Buunk G, Binkhorst RA, et al. The influence of maternal exercise on the uteroplacental vascular bed resistance and the fetal heart rate during normal pregnancy. *Eur J Obstet Gynecol Reprod Biol* 1988;27(1):21–26.
43 Katz VL, McMurray R, Berry MJ, et al. Fetal and uterine responses to immersion and exercise. *Obstet Gynecol* 1988;72(2):225–30.
44 Clapp JF3, Dickstein S. Endurance exercise and pregnancy outcome. *Med Sci Sports Exerc* 1984;16(6):556–62.
45 Collings C, Curet LB. Fetal heart rate response to maternal exercise. *Am J Obstet Gynecol* 1985;151(4):498–501.
46 Sibley L, Ruhling RO, Cameron-Foster J, et al. Swimming and physical fitness during pregnancy. *J Nurse Midwifery* 1981;26(6):3–12.
47 Pomerance JJ, Gluck L, Lynch VA. Physical fitness in pregnancy: Its effect on pregnancy outcome. *American College of Obstetrics and Gynecology* 1974(867-876).
48 Pivarnik JM, Szymanski LM, Conway MR. The Elite Athlete and Strenuous Exercise in Pregnancy. *Clin Obstet Gynecol* 2016;59(3):613–19.
49 Salvesen KA, Hem E, Sundgot-Borgen J. Fetal wellbeing may be compromised during strenuous exercise among pregnant elite athletes. *Br J Sports Med* 2012;46(4):279–83.

50 Kardel KR. Effects of intense training during and after pregnancy in top-level athletes. *Scand J Med Sci Sports* 2005;15(2):79–86.
51 García González J, Ventura Miranda MI, Manchon García F, et al. Effects of prenatal music stimulation on fetal cardiac state, newborn anthropometric measurements and vital signs of pregnant women: A randomized controlled trial. *Complement Ther Clin Pract* 2017;27:61–67.
52 Babbar S, Hill JB, Williams KB, et al. Acute feTal behavioral Response to prenatal Yoga: A single, blinded, randomized controlled trial (TRY yoga). *Am J Obstet Gynecol* 2016;214(3):399.e1-8.
53 Nwebube C, Glover V, Stewart L. Prenatal listening to songs composed for pregnancy and symptoms of anxiety and depression: A pilot study. *BMC Complement Altern Med* 2017;17(1):256.
54 Gebuza G, Dombrowska A, Kaźmierczak M, et al. The effect of music therapy on the cardiac activity parameters of a fetus in a cardiotocographic examination. *J Matern Fetal Neonatal Med* 2017;30(20):2440–45.
55 Polis RL, Gussman D, Kuo Y-H. Yoga in Pregnancy: An Examination of Maternal and Fetal Responses to 26 Yoga Postures. *Obstet Gynecol* 2015;126(6):1237–41.
56 Chuang L, Lin L, Cheng P, Chen C, Wu S, Chang C. The effectiveness of a relaxation training program for women with preterm labour on pregnancy outcomes: A controlled clinical trial. *Int J Nurs Stud* 2012(49):257–64.
57 Fink NS, Urech C, Isabel F, et al. Fetal response to abbreviated relaxation techniques. A randomized controlled study. *Early Human Development* 2011;87(2):121–27.
58 Chuntharapat S, Petpichetchian W, Hatthakit U. Yoga during pregnancy: Effects on maternal comfort, labor pain and birth outcomes. *Complement Ther Clin Pract* 2008;14(2):105–15.
59 DiPietro JA, Costigan KA, Nelson P, et al. Fetal responses to induced maternal relaxation during pregnancy. *Biol Psychol* 2008;77(1):11–19.
60 Narendran S, Nagarathna R, Narendran V, Gunasheela S, Nagendra HRR. Efficacy of Yoga on Pregnancy Outcome. *The Journal of Alternative and Complementary Medicine* 2005(11, 2):237–44.