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Recommended Citation

Freed, Gabrielle SPT; Sheehan, Amanda SPT; Sokol, Amy SPT; and Stack, Haley SPT, "The Effectiveness of Exercise in the Prevention of Gestational Diabetes: A Systematic Review" (2020). *Student Research Poster Presentations 2020*. 63.

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The Effectiveness of Exercise in the Prevention of Gestational Diabetes: A Systematic Review

Gabrielle Freed, SPT; Amanda Sheehan, SPT; Amy Sokol, SPT; Haley Stack, SPT; Nicole Evanosky, PT, DPT; Amy Tremback-Ball, PT, PhD

BACKGROUND

- Gestational diabetes is seen in a pregnant woman who did not previously have diabetes before pregnancy¹
- About 14% of all pregnancies are affected by gestational diabetes²
- Tested for during weeks 24-28 gestation¹
- Treated by proper diet and exercise and insulin when required¹
- Complications include high blood sugar levels, causing extra large size of baby, leading to possible Cesarean section¹
- Associated with high blood pressure, causing mother to develop preeclampsia, a form of high blood pressure during pregnancy, involving a high amount of protein in the urine²

PURPOSE

To evaluate the role of exercise to prevent gestational diabetes and maternal weight gain.

METHODS

Table 1 presents databases used and number of articles screened and included. The search terms used for each database were gestational diabetes, exercise, pregnancy, and weight gain. Inclusion criteria consisted of articles published within the last five years. Articles included ten level 1b and two level 2b from Oxford Center for Evidence-Based Medicine.

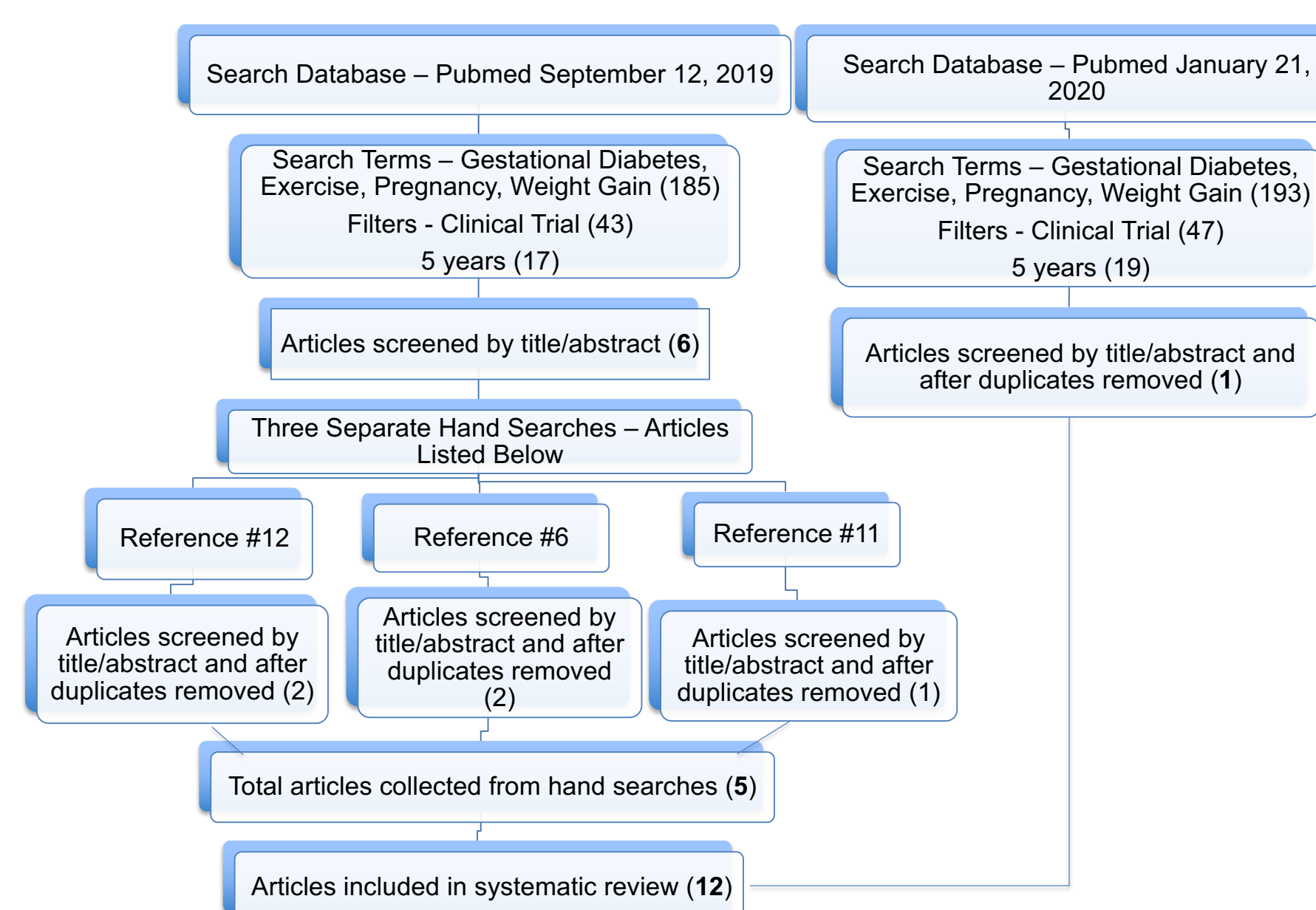


Table 1: Flowchart for Methods

RESULTS

- The primary outcomes across the literature included gestational diabetes mellitus incidence, gestational weight, oral glucose tolerance test, and pregnancy-induced hypertension
- These factors have been known to be risk factors contributing to the diagnosis of gestational diabetes mellitus
- Different themes were found involving the approach of preventing gestational diabetes mellitus
- Recurrent themes throughout the literature review included diet and lifestyle changes, aquatic exercise, moderate aerobic exercise, cycling, and moderate-high aerobic exercise
- These themes have been shown to have a beneficial impact on decreasing risk factors for gestational diabetes mellitus

DISCUSSION

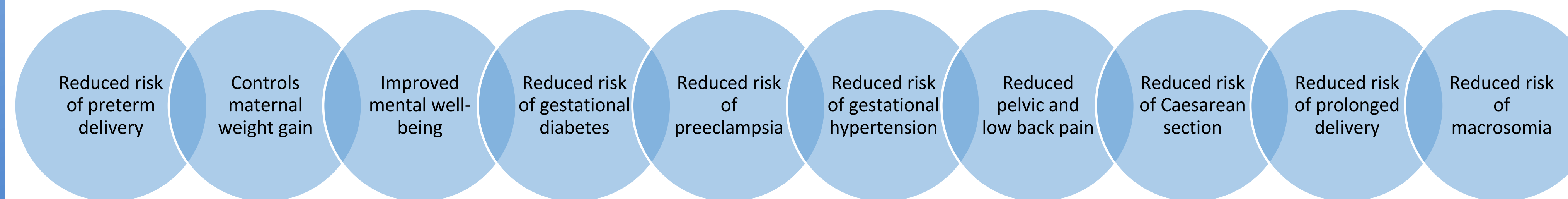


Table 2: Benefits of Exercise from Fahrenholtz¹⁷

Diet and Exercise^{5,6,7,8:}

- Combined lifestyle intervention utilizing healthy eating and physical activity was most effective in limiting gestational weight gain to less than 5 kg
- No effect on fasting glucose levels or insulin resistance
- In overweight and obese population, lifestyle changes can be effective to help prevent pregnancy complications, but cannot prevent gestational diabetes by itself

Aquatic Exercise^{9,10:}

- Started exercise between 10-14 weeks gestation for 50-60 minutes per session
- Aquatic exercise alone or combined with land-based exercise can reduce excessive maternal weight gain and decrease the risk of gestational diabetes
- No significant differences in other pregnancy outcomes

Cycling^{11,12,13,14:}

- Initiated cycling program between 8-12 weeks gestation for 30-60 minutes per session of high to low-moderate intensity training
- Reduced gestational weight gain, but no difference in maternal and neonatal outcomes

Aerobic Exercise^{15,16:}

- Started between 9-11 weeks gestation for 50-55 minutes per session of aerobic exercise with a warm-up and cool-down
- Decrease in hypertension and gestational diabetes found in intervention group

IMPLICATIONS

Physical therapists are responsible for educating their patients about the importance of a healthy lifestyle during pregnancy by promoting exercise and a healthy diet. Therapists must be able to adapt their approaches throughout the different stages of pregnancy in order to be effective in preventing gestational diabetes and other complications related to pregnancy.

CONCLUSION

- Exercise can be beneficial in the prevention of gestational diabetes and reduction of gestational weight gain, depending on body mass index
- Further research is necessary in order to determine the most effective plan of exercise and lifestyle changes to prevent gestational diabetes

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