

Risk of Preterm Birth and its Relation to Physical Activity

Weaam Nabil Albanna*

Gynecologist and Medical Audit Analyst, Dubai Health Authority, United Arab Emirates

***Corresponding Author:** Weaam Nabil Albanna, Gynecologist and Medical Audit Analyst, Dubai Health Authority, United Arab Emirates.

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Background

Physical activity has been inconsistently associated with risk of preterm birth, and the strength of the association and the shape of the dose-response relationship needs clarification.

Objectives

To conduct a systematic review and dose-response meta-analysis to clarify the association between physical activity and risk of preterm birth.

Search strategy

PubMed, Embase and Ovid databases were searched for relevant studies up to 9 February 2017.

Selection criteria

Studies with a prospective cohort, case-cohort, nested case-control or randomized study design were included.

Data collection and analysis

Data were extracted by one reviewer and checked for accuracy by a second reviewer. Summary relative risks (RRs) were estimated using a random effects model.

Main results

Forty-one studies (43 publications) including 20 randomized trials and 21 cohort studies were included. The summary RR for high versus low activity was 0.87 [95% confidence interval (CI): 0.70 - 1.06, $I^2 = 17\%$, $n = 5$] for physical activity before pregnancy, and it was 0.86 (95% CI: 0.78 - 0.95, $I^2 = 0\%$, $n = 30$) for early pregnancy physical activity. The summary RR for a 3 hours per week increment in leisure-time activity was 0.90 (95% CI: 0.85 - 0.95, $I^2 = 0\%$, $n = 5$). There was evidence of a nonlinear association between physical activity and preterm birth, $P_{\text{nonlinearity}} < 0.0001$, with the lowest risk observed at 2 - 4 hours per week of activity.

Conclusion

This meta-analysis suggests that higher leisure-time activity is associated with reduced risk of preterm birth. Further randomized controlled trials with sufficient frequency and duration of activity to reduce the risk and with larger sample sizes are needed to conclusively demonstrate an association.

Tweetable Abstract

Physically active compared with inactive women have an 10–14% reduction in the risk of preterm birth.

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