

Thesis abstract

Risk factors for running-related pain after childbirth

Shefali Christopher

Abstract of a thesis for a Doctorate of Philosophy in Physiotherapy submitted to The University of Newcastle, Callaghan, Australia

Background: Women are initiating or returning to running for exercise after childbirth while also recovering from a myriad of perinatal changes to the body. For these women, integration into a high impact sport is not easy; up to 35% of postpartum runners report painful running. While there are established evidence-based rehabilitation protocols for returning to sport after a major injury, such evidence does not exist for the postpartum running population. This is likely due to a lack of evidence on possible musculoskeletal risk factors associated with running-related pain in postpartum women. A baseline understanding of potential risk factors for running-related pain in postpartum runners is needed to provide a starting point for future validation and interventional studies.

Purpose: The overall aim of this thesis is to identify possible risk factors for running-related pain in postpartum runners and determine their relationship to running, postpartum variables, and movement kinematics.

Methods: Because information on risk factors for running-related musculoskeletal injury in postpartum runners was non-existent, a systematic review was initially performed to understand the relationship between running injury and musculoskeletal strength, flexibility, range of motion and alignment alterations. A separate systematic

review was also conducted to understand the risk factors associated with first-onset lumbopelvic pain (the most common type of pain) in postpartum women. A Delphi study was performed to gain expert consensus on musculoskeletal impairments and running-related risk factors observed in postpartum runners. The information gathered from these studies was used to design and conduct a survey of postpartum runners with and without running-related pain to explore the relationship between demographic, postpartum and running-related risk factors, and pain. Since the effects of postpartum musculoskeletal changes on running are unknown, a laboratory study determined kinematic and musculoskeletal differences between postpartum runners and nulliparous controls.

Results: Both systematic reviews found low-quality evidence and bias within the studies reviewed. Seven studies found seven clinical assessments that predict running-related pain: hip strength; range of motion; flexibility; alignment; knee strength; and ankle alignment. Four studies identified five risk factors associated with first-onset postpartum lumbopelvic pain: C-section with epidural anesthesia; length of first stage labour; race; age; and urinary tract infections. The 45 experts in the Delphi study reached consensus on the following risk factors observed in postpartum

runners: abdominal, hip, and pelvic floor weakness; hip extension restriction; anterior pelvic tilt; general hypermobility; laxity in the abdominal wall; tightness in hip flexors, lumbar extensors, iliotibial band and hamstrings; a Trendelenburg sign; dynamic knee valgus; lumbar lordosis; over-pronation; and thoracic kyphosis. The survey of 538 postpartum runners found six variables that increased the odds of postpartum running-related pain: runner type-novice; postpartum accumulated fatigue scale score; previous running injury; most recent delivery-vaginal; incontinence; and amount of sleep. Using these variables, a clinical tool was created that indicated a 62% probability of having postpartum running-related pain if 4 of 6 variables were present. The laboratory study concluded that postpartum runners had 24.3% greater braking loading rate (mean difference (MD): 3.41 NBW/s; 95% CI 0.08, 6.74), 14% less hamstring flexibility (MD: 10.98°; 0.97, 20.99), 25.9% less hip abduction (MD: 0.04 NBW, 95% CI 0.00, 0.08), and 51.6% less hip adduction strength (MD: 0.06 NBW; 0.02, 0.10) than controls.

Conclusions: This thesis established the first steps in identifying running-related risk factors in postpartum runners. This baseline understanding of potential risk factors for running related pain provides a starting point for prospective studies to investigate risk factors for the onset of running-related pain in postpartum runners. It can also assist health care providers educate postpartum runners and develop interventions to assist postpartum women to stay injury free as they initiate or return to running.

Dr Shefali Christopher
School of Health Sciences
The University of Newcastle
Callaghan NSW 2308

E-mail: Shefalichristopher@gmail.com

URL: <http://hdl.handle.net/1959.13/1460578>