ABSTRACT

Background: The knee is susceptible to injury during cycling due to the repetitive nature of the activity while generating torque on the pedal. Knee pain is the most common overuse related injury reported by cyclists, and intrinsic and extrinsic factors can contribute to the development of knee pain.

Purpose: Due to the potential for various knee injuries, this purpose of this systematic review of the literature was to determine the association between biomechanical factors and knee injury risk in cyclists.

Study Design: Systematic review of the literature

Methods: Literature searches were performed using CINAHL, Ovid, PubMed, Scopus and SPORTDiscus. Quality of studies was assessed using the Downs and Black Scale for non-randomized trials.

Results: Fourteen papers were identified that met inclusion and exclusion criteria. Only four studies included cyclists with knee pain. Studies were small with sample sizes ranging from 9-24 participants, and were of low to moderate quality. Biomechanical factors that may impact knee pain include cadence, power output, crank length, saddle fore/aft position, saddle height, and foot position. Changing these factors may lead to differing effects for cyclists who experience knee pain based on specific anatomical location.

Conclusion: Changes in cycling parameters or positioning on the bicycle can impact movement, forces, and muscle activity around the knee. While studies show differences across some of the extrinsic factors included in this review, there is a lack of direct association between parameters/positioning on the cycle and knee injury risk due to the limited studies examining cyclists with and without pain or injury. The results of this review can provide guidance to professionals treating cyclists with knee pain, but more research is needed.

Level of Evidence: 3a

Key Words: Biomechanics, cycling, knee injury, knee pain, overuse