Publication

Diagnosing Overtraining Syndrome: A Scoping Review

Overtraining syndrome (OTS) is a condition characterized by a long-term performance decrement, which occurs after a persisting imbalance between training-related and nontraining-related load and recovery. Because of the lack of a gold standard diagnostic test, OTS remains a diagnosis of exclusion.; To systematically review and map biomarkers and tools reported in the literature as potentially diagnostic for OTS.; PubMed, Web of Science, and SPORTDiscus were searched from database inception to February 4, 2021, and results screened for eligibility. Backward and forward citation tracking on eligible records were used to complement results of database searching.; Studies including athletes with a likely OTS diagnosis, as defined by the European College of Sport Science and the American College of Sports Medicine, and reporting at least 1 biomarker or tool potentially diagnostic for OTS were deemed eligible.; Scoping review following the guidelines of the Joanna Briggs Institute and PRISMA Extension for Scoping Reviews (PRISMA-ScR).; Level 4.; Athletes' population, criteria used to diagnose OTS, potentially diagnostic biomarkers and tools, as well as miscellaneous study characteristics were extracted.; The search yielded 5561 results, of which 39 met the eligibility criteria. Three diagnostic scores, namely the EROS-CLINICAL, EROS-SIMPLIFIED, and EROS-COMPLETE scores (EROS = Endocrine and Metabolic Responses on Overtraining Syndrome study), were identified. Additionally, basal hormone, neurotransmitter and other metabolite levels, hormonal responses to stimuli, psychological questionnaires, exercise tests, heart rate variability, electroencephalography, immunological and redox parameters, muscle structure, and body composition were reported as potentially diagnostic for OTS.; Specific hormones, neurotransmitters, and metabolites, as well as psychological, electrocardiographic, electroencephalographic, and immunological patterns were identified as potentially diagnostic for OTS, reflecting its multisystemic nature. As exemplified by the EROS scores, combinations of these variables may be required to diagnose OTS. These scores must now be validated in larger samples and within female athletes.