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Running technique retraining - altering biomechanical Variables, Injury Prevention and Performance: a Systematic review

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Running technique can be retrained through different interventions to change different variables. The aim of this study was to analyse and understand whether running gait retraining is effective in altering different biomechanical variables and whether it reduces injury and enhance the performance. Scopus, MEDLINE, CENTRAL, Web of Science were searched using the key terms related to running gait retraining. The quality of study and risk of bias were assessed using down and blacklist. Statistical analysis was performed using Cohen's d. 15 studies investigating the effect of running retraining on biomechanical variables, injury prevention and performance were included in this study. Intervention using pose running method had shown significant effect on few kinematic variables of hip and knee. Pose running method and minimal footwear gait retraining showed significant effect on kinematic values. Spatiotemporal parameter had significant effects in interventions of minimal footwear gait retraining, modification of stride rate and step length. Interventions with increased step rate and minimal footwear gait retraining showed significant effect on injury prevention. Visual and verbal feedback gait retraining increased running performance whereas minimal footwear gait retraining and pose running method didn't show any significant effect on running performance. The study proves that biomechanics can be altered through retraining, pain/injury chance can be reduced, and performance can be enhanced through gait retraining. Athletes or recreational runners should be trained for running so that they don't adapt to any abnormal running biomechanics and so the injury chance can be reduced and help them to reach their optimal performance.