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Research progresses of exercise intervention methods in non-alcoholic fatty liver disease

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Objective This review summarizes the effects of aerobic exercise (AE), resistance exercise (RE), and high-intensity interval training (HIIT) on nonalcoholic fatty liver disease (NAFLD). Discuss The main differences of intervention methods, intervention time, and intervention effects among the NAFLD people, To explore the targeting and dose-response relationship of different exercise models intervention in NAFLD.

Methods This paper uses the keywords such as Non-alcoholic fatty liver disease, non-alcoholic steatohepatitis, NAFLD, NASH, NAFLD and aerobic training, aerobic exercise, resistance training, resistance exercise, high-intensity interval training, high-intensity interval exercise, high-intensity aerobic exercise, HIAT, HIIT, HIT, etc to search in the web of science、Pubmed database, the deadline is March 1, 2018. Inclusion criteria: (1) study design: randomized controlled trials; (2) study questions: effects of exercise on hepatic steatosis in patients with NAFLD; (3) type of exercise: AE, RE, and HIIT; (4) subjects: biochemical examination liver biopsy or ultrasound examination includes a combination of abdominal imaging and magnetic resonance imaging (MRI) imaging of the NAFLD population. Exclusion criteria: (1) non-original studies (2) meeting abstracts (3) did not provide sufficient experimental data (4) animal experiments (5) non-English literature. The search results showed that a total of 16 studies reported the effects of exercise on NAFLD populations.

Results (1) AE, RE and HIIT can reduce hepatic steatosis and improve liver histology in NAFLD people, but their intervention effects are different. AE stands out in reduce body weight, decreases insulin resistance (IR); RE stands out in reduce hepatic fat and increases muscle strength; HIIT has a significant effect in reducing hepatic fat and enhancing cardiovascular fitness. (2) the frequency, duration, and intervention period of AE and RE are similar; achieve the same or better intervention effect, HIIT only requires the 1/3 exercise time of the previous two.

Conclusions RE may be more effective than AE in patients with poor cardiovascular fitness, sarcopenia, and NAFLD who are unable to tolerate or participate in AE; HIIT has certain advantages in the time-effect and dose-effect due to less exercise time and smaller amount of exercise, This is easy for the NAFLD people to accept, and it will facilitate long-term adherence in the future.