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New Study Indicates that Exercise Improves Non-Alcoholic Fatty Liver Disease Improvements Seen in Obese and Overweight Adults Regardless of Amount and Intensity of Exercise, Report Researchers in the *Journal of Hepatology*

Amsterdam, The Netherlands, April 8, 2015 — Non-alcoholic fatty liver disease (NAFLD) is the most common cause of chronic liver disease in the western world. A new study published in the *Journal of Hepatology* shows that exercise, regardless of frequency or intensity, benefits obese and overweight adults with NAFLD.

NAFLD is considered the hepatic manifestation of metabolic syndrome and is commonly associated with obesity and diabetes. There are no approved drug treatments for NAFLD, but lifestyle interventions such as diet, exercise, and the resulting weight loss have been shown to help improve NAFLD. In particular, these interventions can improve some features of non-alcoholic steatohepatitis (NASH), which is the progressive form of NAFLD.

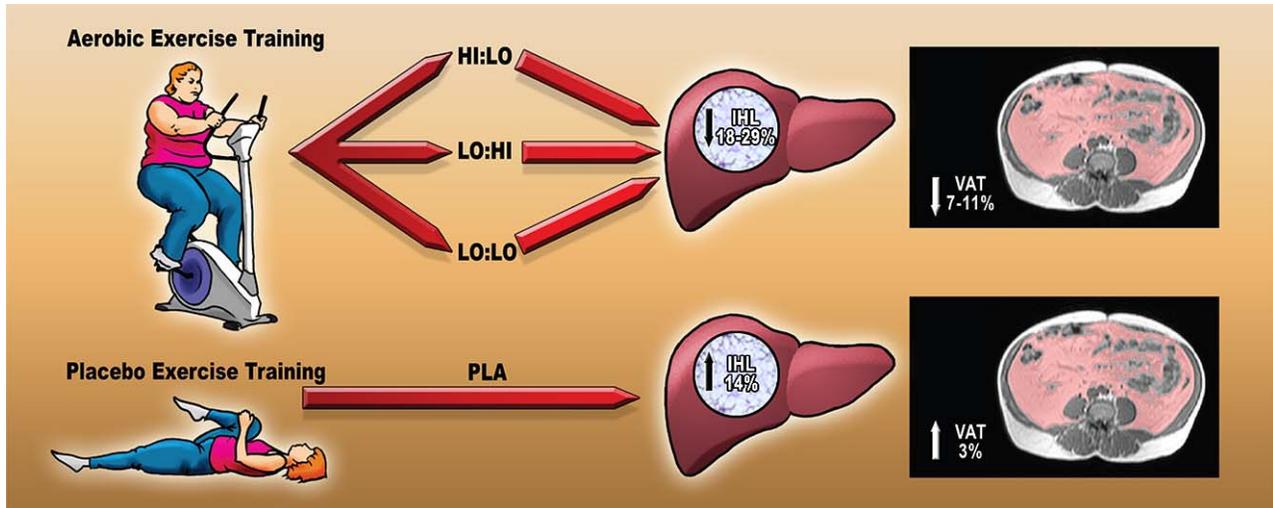
Weight loss is the commonly recommended strategy for all obese and overweight patients with NAFLD. Both aerobic and resistance training-based exercise regimens reduce liver fat as well as visceral fat. However, the exact role of the amount and the intensity of aerobic exercise that would be needed to reverse or improve NAFLD (or NASH) had not been systematically assessed.

In the new study published in the *Journal of Hepatology*, investigators examined the effect of various aerobic exercise regimens in improving liver and visceral fat in overweight and obese people who had sedentary lifestyles. Using a randomized, placebo-controlled clinical trial (RCT) design, they randomized 48 participants into four equal groups of 12 people: low-to-moderate intensity, high-volume aerobic exercise (LO:HI); high-intensity, low-volume aerobic exercise (HI:LO); low-to-moderate intensity, low-volume aerobic exercise (LO:LO); and placebo (PLA) for an eight-week period. Change in liver fat was assessed by magnetic resonance spectroscopy (MRS).

All three groups, irrespective of the exercise regimen, showed improvement in liver fat of about 18-29% from the average baseline 7.5%, compared with the placebo group in which liver fat increased by an average of 14%. The improvement was independent of weight loss. There were no significant differences between the various aerobic exercise regimens in reducing liver fat over an eight-week period. However, the investigators conducted additional exploratory analyses and proposed that there was a trend towards

greater reduction in liver fat and visceral fat in the two groups that utilized either high intensity with low volume (HI:LO) or low intensity with high volume (LO:HI) aerobic exercise.

“The results from our study show that all exercise doses, irrespective of volume or intensity, were efficacious in reducing liver fat and visceral fat by an amount that was clinically significant, in previously inactive, overweight, or obese adults compared with placebo. These changes were observed without clinically significant weight loss,” explained lead investigator Dr. Nathan Johnson, PhD, Senior Lecturer at the University of Sydney, Australia. “We found no difference between exercise regimens for these benefits,” added Jacob George, PhD, MBBS, Professor of Hepatic Medicine at the University of Sydney, Australia, and Head of the Department of Gastroenterology and Hepatology at Westmead Hospital and University of Sydney.



Caption: Effect of aerobic exercise dose on intrahepatic lipid and visceral adiposity

In an editorial in the same issue, Rohit Loomba, MD, MHSc, of the Division of Gastroenterology and Epidemiology at the University of California, San Diego, and Helena Cortez-Pinto, MD, PhD, of the Gastroenterology Service, Hospital de Santa Maria, Lisbon, Portugal, observed that “there is good quality evidence to support that regular exercise is beneficial in reducing the risk of NAFLD. In addition, both aerobic and resistance training regimens are equally effective in reducing liver fat in individuals with NAFLD even in the absence of weight loss.

They suggest that duration of exercise and intensity of exercise are both important and one could perhaps personalize the exercise regimen based upon a participant’s choice and still achieve similar results.

“There are, however, no data to support that exercise alone without weight loss can improve or reverse NASH. There is preliminary evidence that vigorous exercise may be associated with a decreased risk of having NASH,” added Dr. Loomba and Dr. Cortez-Pinto. “The individual and joint effect of dose and intensity of exercise and their association with improvement in liver fat and other histologic features that are associated with NASH are key research priorities. In our expert opinion, a more stringent exercise-regimen than the U.S. Department of Health and Human Services recommends, coupled with dietary interventions, may be needed to induce improvement in liver histologic features associated with NASH.”

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NOTES FOR EDITORS

“Effect of aerobic exercise training dose on liver fat and visceral adiposity,” by Shelley Keating, Daniel Hackett, Helen Parker, Helen O’Connor, James Gerofi, Amanda Sainsbury, Michael Baker, Vivienne

Chuter, Ian Caterson, Jacob George, and Nathan Johnson. DOI: <http://dx.doi.org/10.1016/j.jhep.2015.02.022>.

“Editorial: Exercise and improvement of NAFLD: Practical recommendations,” by Rohit Loomba, MD, MHSc, and Helena-Cortez Pinto, MD, PhD. DOI: <http://dx.doi.org/10.1016/j.jhep.2015.02.02>.

Published in the *Journal of Hepatology*, online in advance of Volume 63, Issue 1 (July 2015).

Full text of these articles are available to credentialed journalists upon request; contact Sybrand Boer Iwema at +31 20 485 2781 or hmsmedia@elsevier.com. Journalists wishing to interview the study authors should contact Dr. Jacob George at +61 2 9845 7705, jacob.george@sydney.edu.au or Dr. Nathan Johnson at +61 2 9351 9137, nathan.johnson@sydney.edu.au. They may contact Dr. Loomba directly at +1 858-534-2624 or roloomba@ucsd.edu. An accompanying video is posted at <https://youtu.be/xpwEj8BhEUc> and is also under embargo until April 8, 2015, 12:01 AM ET.

ABOUT THE JOURNAL OF HEPATOLOGY (www.journal-of-hepatology.eu)

The *Journal of Hepatology* is the official journal of the European Association for the Study of the Liver (EASL). It publishes original papers, reviews, case reports and letters to the Editor concerned with clinical and basic research in the field of hepatology. The journal, with an Impact Factor of 10.401, is ranked 5th among titles in Gastroenterology and Hepatology according to the 2013 Journal Citation Reports® published by Thomson Reuters, 2014.

ABOUT EASL (www.easl.eu)

In the forty plus years since EASL was founded, it has grown from a small organization that played host to 70 participants at its first meeting, to becoming the leading liver association in Europe. EASL attracts the foremost hepatology experts as members and has an impressive track record in promoting research in liver disease, supporting wider education and promoting changes in European liver policy.

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