

## The Effect of 12 Weeks Aerobic, Resistance, and Combined Exercises on Omentin-1 Levels and Insulin Resistance among Type 2 Diabetic Middle-Aged Women (*Diabetes Metab J* 2017;41:205-12)

Sasan Amanat<sup>1</sup>, Mohammad Fararouei<sup>2</sup>, Mostafa Dianatinasab<sup>2</sup>

<sup>1</sup>Department of nutrition sciences, Evaz School of Health, Larestan University of Medical Sciences, Larestan,  
<sup>2</sup>Shiraz HIV/AIDS Research Center, Institute of Health, Shiraz University of Medical Sciences, Shiraz, Iran

We appreciate Dr. Kim's interest and comments on our article entitled "The effect of 12 weeks aerobic, resistance, and combined exercises on omentin-1 levels and insulin resistance among type 2 diabetic middle-aged women" which was published in *Diabetes and Metabolism Journal* [1].

Omentin is an adipokine, which is expressed and secreted from adipose tissue [2]. Among total body fat storages, visceral adipose tissue (VAT) is distinct in omentin secretion. Serum omentin concentration is related to obesity and type 2 diabetes mellitus [3]. In addition, recent studies reported that omentin level in the bloodstream is increased by lifestyle modification or exercise [4,5]. To understand what is the exact mechanisms of rise in omentin-1 secretion when the above interventions are applied and whether fat depots is only a causal link between lifestyle and change in omentin production or both healthy lifestyle (including physical exercise) and change in fat depots are the main causes for this achievement, measurement of body fat storage is indispensable. In this regard, we completely agree with Dr. Kim that measurement of abdominal circumference could have improved our understanding of the effect of exercise on central obesity and omentin secretion. However, because of cultural and religious sensitivities, we preferred not to measure abdominal circumference of female par-


ticipants as otherwise, we would have significant decrease in participation rate. Anyhow, due to the following reasons we believe our decision did not critically limit the findings of our study.

VAT can be divided into omental, mesenteric, retroperitoneal, gonadal, and pericardial [6]. As Yang et al. [7] suggested, omental fat expresses and secretes much greater omentin compare to other VAT components and subcutaneous adipose tissue (SAT). Abdominal circumference is a good meter for change in SAT and mesenteric but not omental fat and in return omentin production [8]. Indeed, more accurate methods for measuring different parts of VAT are high-resolution magnetic resonance imaging and computerized tomography scan. Not of these methods were decided to be used in our study due to high costs and potential side effects [9,10].

As suggested by Dr. Kim, We also believe more studies are needed to clarify the mechanisms that physical exercise affect omentin secretion from visceral fat depots.

### CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

Corresponding author: Mostafa Dianatinasab  
 <https://orcid.org/0000-0002-0185-5807>  
Shiraz HIV/AIDS Research Center, Institute of Health, Shiraz University of Medical Sciences, Shiraz, Iran  
E-mail: dianati.epid@gmail.com

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

## REFERENCES

1. AminiLari Z, Fararouei M, Amanat S, Sinaei E, Dianatinasab S, AminiLari M, Daneshi N, Dianatinasab M. The effect of 12 weeks aerobic, resistance, and combined exercises on omentin-1 levels and insulin resistance among type 2 diabetic middle-aged women. *Diabetes Metab J* 2017;41:205-12.
2. Tan BK, Adya R, Randeve HS. Omentin: a novel link between inflammation, diabetes, and cardiovascular disease. *Trends Cardiovasc Med* 2010;20:143-8.
3. Pan HY, Guo L, Li Q. Changes of serum omentin-1 levels in normal subjects and in patients with impaired glucose regulation and with newly diagnosed and untreated type 2 diabetes. *Diabetes Res Clin Pract* 2010;88:29-33.
4. Wilms B, Ernst B, Gerig R, Schultes B. Plasma omentin-1 levels are related to exercise performance in obese women and increase upon aerobic endurance training. *Exp Clin Endocrinol Diabetes* 2015;123:187-92.
5. Urbanova M, Dostalova I, Trachta P, Drapalova J, Kavalkova P, Haluzikova D, Matoulek M, Lacinova Z, Mraz M, Kasalicky M, Haluzik M. Serum concentrations and subcutaneous adipose tissue mRNA expression of omentin in morbid obesity and type 2 diabetes mellitus: the effect of very-low-calorie diet, physical activity and laparoscopic sleeve gastrectomy. *Physiol Res* 2014;63:207-18.
6. Bjorndal B, Burri L, Staalesen V, Skorve J, Berge RK. Different adipose depots: their role in the development of metabolic syndrome and mitochondrial response to hypolipidemic agents. *J Obes* 2011;2011:490650.
7. Yang RZ, Lee MJ, Hu H, Pray J, Wu HB, Hansen BC, Shuldiner AR, Fried SK, McLenithan JC, Gong DW. Identification of omentin as a novel depot-specific adipokine in human adipose tissue: possible role in modulating insulin action. *Am J Physiol Endocrinol Metab* 2006;290:E1253-61.
8. Kuk JL, Lee S, Heymsfield SB, Ross R. Waist circumference and abdominal adipose tissue distribution: influence of age and sex. *Am J Clin Nutr* 2005;81:1330-4.
9. Smith-Bindman R, Lipson J, Marcus R, Kim KP, Mahesh M, Gould R, Berrington de Gonzalez A, Miglioretti DL. Radiation dose associated with common computed tomography examinations and the associated lifetime attributable risk of cancer. *Arch Intern Med* 2009;169:2078-86.
10. Shen W, Wang Z, Punyanita M, Lei J, Sinav A, Kral JG, Imielinska C, Ross R, Heymsfield SB. Adipose tissue quantification by imaging methods: a proposed classification. *Obes Res* 2003;11:5-16.