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Letter to the Editor: Exceptional Data in Paper on “The effect of meridian massage on BM, BMI, WC and HC in simple obesity patients: a randomized controlled trial”

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Dear Editor

Given the tremendous need for effective weight loss treatments, we read with interest the paper by Yan et al. [1] and were intrigued by the reported finding that a form of massage produced weight loss in a randomized controlled trial. Upon closer inspection, we were struck by the magnitude of the results. Specifically, in an 8-week period, the treatment (massage) group lost over 7 kg, more than 9% of their baseline body weight, and 3.7 kg more than the control group lost. Such results rival those of all available obesity treatment procedures except surgery and very low calorie meal replacement programs. Yet, as we read the paper more carefully, we noticed several oddities.

To put the reported findings in perspective, a validated computational model that estimates energy intake during weight loss [2] was applied to determine the reduction in energy intake needed to achieve the 8-week weight loss reported in Yan et al. The model is based on the first law of thermodynamics and requires input of age, height, baseline weight, and gender. Since most of the subjects were female, we input the gender as female. We used the average pre- and post-treatment body weights and an average age of 30 to calculate the average energy intake estimated by the model. Height was algebraically solved for by setting the reported body mass index at baseline equal to the baseline body weight divided by height squared (see next paragraph). The model estimated that the reduction in daily energy intake needed to achieve the reported weight loss was roughly 1300 kcal (from a baseline intake of over 2500 kcal/day) over the 8-week period. That is, persons would need to reduce their energy intake to 1300 kcal lower than their baseline level (to an intake of roughly 1200 kcal/day) in order to achieve this degree of weight loss. Many interventions prescribe such low energy restrictions; however, full adherence to such a restriction is rare [3] and observed

primarily in studies where subjects were supervised in residence [4], making the data reported seem extraordinary.

Looking more closely at the weight change data, we note that the investigators reported the means and standard deviations of weight and BMI at both baseline and end point, but did not report any statistics on the height measurements. Because the ratio of two arithmetic means of two sets of numbers (weight and height² in this case) is not necessarily equal to the arithmetic mean of ratios of paired values (i.e., individual values of weight/height² in this case), calculating changes in height from pre and post BMI measurements is not necessarily accurate. However, the ratio of geometric means of two sets of numbers is equal to the geometric mean of the individual ratios. Using the Jean series formulation [5], we approximated the geometric mean body weight in kg and the geometric mean BMI by using the arithmetic means and standard deviations given in Yan et al's Table 2 for both treatments pre- and post-treatment, and then solved for the approximate geometric means of height pre- and post-treatment. For the control group, this method estimates a starting geometric mean height of 1.63 m, while we estimated that the geometric mean height at the end of the study is 1.66 m, or an increase in height of 2.91 cm. For the massage group the results are more extreme: the estimated pre-height is also 1.63 m, but the end height is estimated to be 1.70 m, or a growth of 6.54 cm. These estimates are similar to directly back calculating from the arithmetic instead of the geometric means (2.90 and 6.88 cm, respectively). Individuals losing almost 10% of their body weight in 8 weeks is remarkable enough, but to also see a growth of over 6 cm in height among adults is highly doubtful.

We also wish to note that the authors do not make mention of obtaining approval from an ethics committee nor of registering their trial in a clinical trials registry (chictr), even though the Journal guidelines and the guidelines of the International Committee of Medical Journal Editors (ICMJE), to which the *World Journal of Acupuncture-Moxibustion* asks authors to adhere, specify that authors should do so.

According to the ICMJE guidelines, we believe that the authors should provide the raw data for this study, so that others may verify the results, and provide documentation of IRB approval and clinical trial registration or retract the paper.

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