Journal of Clinical Research and Clinical Trials
2023 Volume 2, Issue 1
DOI: 10.59657/2837-7184.brs.23.006

BioRes Scientia
Value your Research

Research Article

Open Access

The Healthiest Weight: Present and Future

Jose Alvarez, Scientist, CEO at Virtual Personal Trainer, Spain.
**Corresponding Author: José M Peregrin-Alvarez.*

Abstract

Successful weight loss and maintenance programs should consider the optimal timing forthe brain's control of body weight. The bases for successful Weight Management Programs have been recently proposed utilizing a new BMI sub-categorization and currentstate-of-the-art technologies. An inverse relationship between meal frequency and body weight has also been observed and is directly related to achieving a healthy weight.

Practising regular exercise has also been shown to cause a significant reduction in Heart Rate while achieving and maintaining the Healthiest Weight as well as increasing life expectancy. Thus, the implementation of healthy habits and regular aerobic exercise programs by public authorities may contribute to the reduction in all-cause mortality worldwide. Adapting WHO-defined BMI thresholds to novel calibrated thresholds has beenfurther revalidated by incorporating recently published multi-dimensional data from large- scale worldwide studies, resulting in a new likelihood model of the health risks associated with adiposity. This latest study has great potential in personalized and preventive medicine. In addition to ongoing vaccination programs, the results of this novel approach could be used as an "alternative method of prevention" to naturally tackle the current COVID-19 pandemic, and other anticipated in the future to come. Other current and futureweight management developments are also discussed.

Keywords: bmi; ideal weight; healthiest weight; weight management; lipostat theory; health-related apps; mhealth, obesity, overweight; weight loss; meal frequency; artificial intelligence; machine learning

Introduction

Obesity continues to be a very interesting topic of study given its involvement in human disease [1-3], requiring urgent public health solutions [4-6]. The Ideal Weight and the Healthiest Weight (HW), a unique measurement of general health status for everyone, hasbeen an interesting topic for years [7]. For decades, health specialists have been classifying people into different weight categories based on Body Mass Index (BMI) thresholds [8]. This popular measurement, adopted by the World Health Organization (WHO), has been questioned due to various deficiencies in estimating obesity/overweight for both healthy and diseased populations [9]. The main purpose of this article is to reviewthe current obesity concerns, by introducing the HW measurement and recent approachesto assess BMI thresholds using the latest discoveries on: a) Health risks, including COVID-19, and mortality data; b) The average of adiposity levels with the same BMI across different ages and genders; and c) The optimal timing for the brain control of weight- presetting (the bases of the "Lipostat theory").

Methods

A volunteer individual was subjected to a case study. The participant showed to have a strong commitment to improving both physical and mental health. The values of BMI (Normal category: 18.5–25) were transformed into ideal weights, based on height and weight, and further sub-categorized into three categories [7]. A comprehensive bibliographic review of the best psychological approaches used for motivation and weight management programs was conducted, and the most effective parameters were incorporated into a user-friendly mobile app.

The Present and Future of The Healthiest Weight

Studies have shown that successful weight loss and maintenance programs should consider the optimal timing for the brain control of weight-presetting [7]. The bases for successful Weight Management Programs have been recently proposed employing

BMI sub-categorization and current state-of-the-art technologies, the first reported human experiment involving successful long-term weight loss, metabolic adaptation and weight- presetting, which is consistent with the Lipostat theory [7], raising new concepts, ideas and setting up the bases for further investigations. Furthermore, during the same study, an inverse relationship between meal frequency and HW was consistently observed, suggesting that "snack-eating" may help to avoid obesity/weight gain, further supporting other previously published meal frequency studies [10]. On the other hand, this study concluded that aerobic exercise positively contributes to decreasing HR, achieving and maintaining HW, and increasing life expectancy [11,12]. Thus, the implementation of regular aerobic exercise programs by public authorities may contribute to the reduction in all-cause mortality in the population.

This novel approach consisting of adapting WHO-defined BMI thresholds to novel calibrated thresholds has been further revalidated more recently by incorporating published multi-dimensional data from large-scale worldwide studies [13]. This novel WHO-readapted probabilistic BMI-based approach is providing a more realistic body-
weight categorization resulting in a new likelihood model of the health risks associated withadiposity. This new calibrated version of WHO-defined BMI thresholds set up the bases forfurther experimental investigations aiming at the application of personalized and preventive medicine, as well as successful long-term Weight and Health Management Programs. In addition to ongoing vaccination initiatives, this novel approach could be used as an "alternative method of prevention" to naturally tackle the current COVID-19 pandemic, and other anticipated to come in the future.

While studies show that most people are not able to keep weight loss for the long term, probably due to a lack of motivation, recent studies have shown that the effective application of motivational initiatives is fundamental to creating a positive mindset and habits. The HW studies provide additional qualitative research on the effect of motivationas a factor in behavioural interventions to reduce obesity/overweight levels in the population, highlighting the importance of self-determination for succeeding in long-termweight loss and maintenance programs [14].

Current modern methodologies

Weight loss and maintenance programs can be delivered through various methods including the latest technologies such as mobile apps. The number of downloadable health-related apps for mobiles has been rising exponentially [15]. Interestingly, out of the
thousands of downloadable health-related apps that use effective weight management and scientifically-proven interventions, only one app has been associated with long-term weight loss and HW maintenance, the "One Click to Health" app [7]. This app has also been shown to be fundamental to reducing the chance of disease severity due to COVID-19 as well as other severe diseases [13].

Given the importance of motivation to effectively implement any weight management program, an effective evaluation of the level of motivation before implementing any weight management strategy, as well as monitoring further progress, is fundamental [14]. Based on 14 habits and psychological questions, the "Weight loss motivator" app: First, calculatethe level of Weight loss/Maintenance Motivation; Then, gives the advice to boost motivation; and finally, provides useful information and tips for future actions. In summary, the app, which evaluates an individual level of motivation, provides a list of recommendations to help boost motivation, warranting long-term weight loss and HWsuccess and maintenance.

Other modern developments that help to achieve and maintain the HW include the following user-friendly apps: 1) Healthy eating quiz [16]; Calorie breaker [17]; Weight checker [18]; Smart vibes [19]; Future weight [20]; Belly calculator [21]; Smart weight [22]; and Calorie distance [23]. Altogether, these apps are tackling the most importantaspects of weight loss and HW success and maintenance, including healthy eating, physical activity and mindset, all seen from different perspectives.

The future

Many areas of improvement regarding weight management and HW success has been identified [15], setting up the bases for further experimental studies and future eHealth developments. Effective interventions urge the implementation of collaborative efforts for the future development and testing of high-quality scientifically-driven modern technologiessuch as mobile apps applied to mHealth weight management before they are distributed into commercial markets.

Weight management mobile apps are currently widely available and very popular but they lack professional content expertise. Only ~0.05% of apps have been developed with an identifiable professional input [24]. Encouraging app development based on mHealth evidence-based approaches would assure content quality, allowing healthcare professionals to recommend their use, and greatly facilitating their professional interventions. Personal contact and frequent interactions in interventions have also been associated with weight loss [25]. By conducting comprehensive literature and clinical trial searches, a recent study found very few active, completed, or published studies testing theefficacy of mobile apps using randomized controlled trials [26]. Ideally, research efforts should focus on demonstrating the efficacy of behavioural interventions and remote self-monitoring for mHealth weight management treatments using effective, randomized controlled trials. Furthermore, an article has shown that most currently available apps collecting dietary intake use the same nutrition assessment methods and technologies for data input [27]. However, emerging technologies, such as image recognition, natural language processing, and artificial intelligence (AI), have not yet been widely identified.

Furthermore, most of the available apps have no decision-making engine capable of providing personalized expert advice. Collaborative efforts between developers, researchers, clinicians, and patients will be highly recommended to develop and test high-quality science-based mobile apps for the effective implementation of mHealth weight management programs before they can be widely distributed into online markets [28,29].

As for the current indiscriminate use of machine learning and AI applied to most fields, theuse of AI in weight loss programs is still in the early stages. Recently, some authors have proposed a framework for the applicability of AI for weight loss but cautioned about its contingency upon engagement and contextualisation [30]. Further research into AI and itsapplication in telemedicine, with clinical trials investigating effects on weight, health behaviours, user engagement and acceptability, appears to be a rising area of investigation [31].

References

1. Finucane MM, Stevens GA, Cowan MJ, et al. (2011). National, regional, and global trends in body-mass index since 1980: systematic analysis of health examination surveys and epidemiological studies with 960 country- years and 9 1 *million participants. Lancet.* 377(9765):557-567.
2. Ng M, Fleming T, Robinson M, et al. (2014). Global, regional, and national prevalence of overweight and obesity in children and adults during 1980–2013: a systematic analysis for the Global Burden of Disease Study. *Lancet.* 384(9945):766-781.
3. Kelishadi R. (2007). Childhood overweight, obesity, and the metabolic syndrome in developing countries. *Epidemiologic Rev*. 29(1):62-76.
4. Friedrich MJ. (2017). Global obesity epidemic worsening. *J Am Med Assoc*. 318:603.
5. Mann T, Tomiyama AJ, Ward A. (2015). Promoting public health in the context of the "obesity epidemic" false starts and promising new directions. *Perspect. Psychol. Sci*. 10:706-710.
6. Nestle M, Jacobson MF. (2000). Halting the obesity epidemic: a public health policy approach. *Public Health Rep.* 115:121.
7. Peregrin-Alvarez JM. (2017). Self-Experiencing "The Healthiest Weight". *J Obes Overweig.* 3(1):101.
8. Keys A, Aravanis C, Blackburn H, Buzina R, Djordjević BS, et al. (1980). Seven Countries Study: a multivariate analysis of death and coronary heart disease. Cambridge, England: *Harvard University Press.*
9. Rothman KJ. (2008). BMI-related errors in the measurement of obesity. Int J Obes. 32(3):56-59.
10. Peregrin-Alvarez. JM. (2019). Consistent Weight Loss linked to higher meal frequency. *Adv Obes Weight Manag Control*. 9(1):12-14.
11. Aune D, Sen A, o'Hartaigh B, Janszky I, Romundstad PR, et al. (2017). Resting heart rate and the risk of cardiovascular disease, total cancer, and all-cause mortality—A systematic review and dose-response meta- analysis of prospective studies. *Nutr. Metab. Cardiovasc. Dis*. 27(6):504-517.
12. Peregrin-Alvarez JM. (2021). Consistent Reduction of Heart Rate Through Regular Aerobic Exercise. *J Comm Med and Pub Health Rep*. 2(8).
13. Peregrin-Alvarez JM. (2022). The Body Mass Index as a Model for Disease-Prevention. *Biomed J Sci & Tech Res.* 41(5).

14. Peregrin-Alvarez JM. (2023). Self-determination: the key to successful weight loss and maintenance programs. *Adv Obes Weight Manag Control*. 13(1):22-23.
15. Peregrin-Alvarez JM. (2017). Long-Term Weight Loss by Mobile App: *Current Status and Future Perspectives. EC Nutrition*. 01:41-46.
16. Nikolaou CK and Lean ME. "(2017). Mobile applications for obesity and weight management: current market characteristics". *International Journal of Obesity*. 41(1)200-202.
17. Schippers M., et al. (2017). "A meta-analysis of overall effects of weight loss interventions delivered via mobile phones and effect size differences according to delivery mode, personal contact, and intervention intensity and duration". *Obesity Reviews*. 18(4):450-459.
18. Sutton EF and Redman LM. (2016). "Smartphone applications to aid weight loss and management: current perspectives". Diabetes, Metabolic Syndrome and Obesity: *Targets and Therapy*. 9:213-216.
19. Franco RZ, et al. (2016). "Popular Nutrition-Related Mobile Apps: A Feature Assessment". *JMIR Mhealth Uhealth*. (4) 3:85.
20. Rivera J., et al. (2016). "Mobile Apps for Weight Management: A Scoping Review". *JMIR Mhealth Uhealth*. (4) 3:87.
21. Virtual Personal Trainer. "eHealth and Big Data". *Virtual Personal Trainer*.
22. Han Shi Jocelyn Chew, Wei How Darryl Ang, Ying Lau. (2021). The potential of artificial intelligence in enhancing adult weight loss: a scoping review. *Public Health Nutr*. 24(8):1993-2020
23. Natalie Stein, Kevin Brooks. (2017). A Fully Automated Conversational Artificial Intelligence for Weight Loss: Longitudinal Observational Study Among Overweight and Obese Adults. *JMIR Diabetes*. 2(2):28.

Cite this article: *Jose Alvarez* (2023). The Healthiest Weight: Present and Future. *Journal of Clinical Research and Clinical Trials*, BRS Publishers. 2(1); DOI: 10.59657/2837-7184.brs.23.006

Article History: **Received:** February 12, 2023; **Accepted:** March 15, 2023; **Published:** March 24, 2023