



Review Article: A carbohydrate consumption review on the peak week for bodybuilding athlete during a drug-free and non-drug-free preparation

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ABSTRACT

Background and aims: The Peak Week is the last week to competition day, that is, the final 6 or 7 days out until the competition day in which the athlete adjusts the number of calories and carbohydrate supply. This week, it is common for athletes to drastically reduce their carbohydrate consumption in the initial days, practically in the first three or four days of that week, to increase the quantity and improve muscular aesthetics within the last days out, thinking about a better physique to enhance on-stage presentation and performance. Therefore, the objective of this work is to bring a new discussion, a new understanding, speculating about the how much carbohydrates can be offered to the bodybuilding athlete during the Peak Week correlating non-drug-free and drug-free athletes.

Methods: Using the PubMed and ScienceDirect database, and Sports MDPI journal, a search was performed with the following keyword: “Peak Week”. The initial idea was to use the keyword “Peak Week” to find articles and filter articles that dealt with the topic specifically. The articles found could be reviews, case studies or cross-sectional studies, there would be no exclusion regarding the study model, however, it should directly address the theme of the keyword used.

Results: Using “Peak Week” as a keyword, the author obtained 18,693 results by PubMed, 850,855 results by ScienceDirect, and 5 results by Sports MDPI. In the ScienceDirect database, no article directly highlighted Peak Week, the words displayed in the articles titles found in the search were different from the subject of Peak Week for bodybuilding athletes. In PubMed, 2 articles evaluated the topic directly for bodybuilding athletes and in Sports MDPI, 2 articles also evaluated the topic directly for bodybuilding athletes.

Conclusion: During the Peak Week, athletes with or without the use of anabolic steroids restrict carbohydrates for the first three or four days, on the remaining days, the carbohydrates intake is increased to improve their appearance on the presentation day. However, non-drug-free athletes appear to be able to maintain lower amounts during the initial and final days of Peak Week compared to drug-free athletes.

Keywords: Peak Week; Bodybuilding; Non-drug-free athletes; Drug-free athletes.

Introduction

Bodybuilding is a competitive endeavor where a combination of muscle size, symmetry, “conditioning” (low body fat levels), and stage presentation are judged. To enhance on-stage presentation and performance, competitors achieve extreme muscle size and definition aided by implementing acute peaking protocols on the last week before presentation, called peak week strategies [1]. Such practices can involve manipulating nutrition and training variables to increase intramuscular glycogen and water while minimizing the thickness of the subcutaneous layer. Carbohydrate manipulation is a prevalent strategy utilized to plausibly induce muscle glycogen supercompensation and subsequently increase muscle size. This way the peak week strategies seems to carbohydrates periodization strategies but are not due the peak week strategies happen at the last week to competition day [2]. Commonly reported peaking strategies include altering exercise and nutritional

regimens, including manipulation of macronutrient, water, and electrolyte intake, as well as consumption of various dietary supplements. The Peak Week is the last week to competition day, that is, the final 6 or 7 days out until the competition day in which the athlete adjusts the number of calories and carbohydrate supply. This week, it is common for athletes to drastically reduce their carbohydrate consumption in the initial days, practically in the first three or four days of that week, to increase the quantity and improve muscular aesthetics within the last days out, thinking about a better physique to enhance on-stage presentation and performance. The primary goals for these interventions are to maximize muscle glycogen content, minimize subcutaneous water, and reduce the risk abdominal bloating to bring about a more aesthetically pleasing physique on the stage presentation are judged [3]. Therefore, the objective of this work is to bring a new discussion, a new understanding, speculating about the how much carbohydrates can be offered to the bodybuilding athlete during the Peak Week correlating non-drug-free and drug-free athletes.

Methods

Such as this a subject still little discussed scientifically, finding articles that discussed this theme became difficult research. This way, using the PubMed and ScienceDirect database, and Sports MDPI journal, a search was performed with the following keyword: "Peak Week". The initial idea was to use the keyword "Peak Week" to find articles and filter articles that dealt with the topic specifically. The articles found could be reviews, case studies or cross-sectional studies, there would be no exclusion regarding the study model, however, it should directly address the theme of the keyword used. Therefore, only studies that directly analyzed Peak Week during the preparation of bodybuilders were evaluated. The central idea of this work was to be able to understand more about carbohydrate consumption during Peak Week and outlines some recommendations based on recently published evidence on how much carbohydrates should be offered during this period. No statistical or mathematical calculations were used by the author. The analyzes were to look for the amounts of carbohydrates used by the authors during Peak Week and bring some understanding about how carbohydrate offerings were carried out, due to the topic still being quite empirical and containing little research on the topic on a scientific basis.

Results

Using "Peak Week" as a keyword, the author obtained 18,693 results by PubMed, 850,855 results by ScienceDirect, and 5 results by Sports MDPI. In the Science Direct database, no article directly highlighted Peak Week, the words displayed in the article titles found in the search were different from the subject of Peak Week for bodybuilding athletes. In PubMed, 2 articles evaluated the topic directly for bodybuilding athletes [1,3] and in Sports MDPI, 2 articles also evaluated the topic directly for bodybuilding athletes [4,5]. These met the inclusion criteria described in the methodology of this study and were analyzed by the author. The studies found on PubMed, both studies were review. In the searches carried out at Sports MDPI, one study was cross-sectional, and the other was a case study. However, in the cross-sectional study, the participants were anabolic users and in the case study, the individual was a drug-free bodybuilding athlete. The main studies evaluated and discussed on this work were these two, the case study and the cross-sectional study published in Sports MDPI.

Firstly, the cross-sectional study, included ten subjects non-drugfree competitorsthat displayed the following baseline characteristics (expressed as median and range): 33.00 (22.00) years of age; 88.90 (21.8) body mass (kg); and 174.00 (22.00) (cm). These athletes ingested during the Peak week from Monday to Thursday, approximately 20g. day-1 of carbohydrates, at the Friday, carbohydrate intake rose to 60g. day-1, and, at the Saturday, the day of the competition, carbohydrate intake dropped to 10g. day-1 [4].The next, the case study, evaluated a drug free bodybuilder athlete. This study demonstrated use a Peak week strategy with 6, 5 and 4 days out competition containing an average of 2,400 kcal and 80 g of carbohydrates followed by an average of 3,500 kcal and 580 g of carbohydrates on the 3, 2 and 1 days out to competition day. Macronutrient and calorie intake varied throughout the peak week depending on the phase/objective the athlete was in (i.e., carb depletion, fat loading, and carb loading).At the final, the athlete evaluated improve the muscle thickness, body fat percentage and subcutaneous layer thickness [5].Therefore, these studies demonstrate an average amount of 2,500 kcal during the lowest days and 3,500 during the highest days for caloric consumption during peak week. Furthermore, carbohydrate consumption appears to fluctuate between 80 and 100 g per day to 550 and 580 g per day.

Discussion

A recent study that didn't talk about Peak Week specifically, used caloric restriction for eleven male bodybuilders seeking to improve the body fat percentage to the competition day. For this, the researchers offered two thousand calories with thirty percent carbohydrates during weekdays and four thousand calories containing seventy per cent carbohydrates during the weekend, resulting in a significant reduction in body weight and body fat with a significant increase in lean mass [6]. Therefore, it seems interesting for the bodybuilder athlete to periodize their food, mainly carbohydrates intake, by cycling this consumption to improve their body composition data maintaining performance on the trainings. These strategic carbohydrate and calorie reductions are only possible because athletes are able to maintain performance when this nutrient is not reduced for long periods [7]. In other words, it becomes interesting to periodize the consumption of carbohydrates during periods of muscle definition, aiming to maintain the level of training and reduce the percentage of fat, and this is only possible because the time is not long. Thus, the use this reasoning during Peak Week becomes possible for bodybuilding athletes.

During the first three days of Peak Week, both studies evaluated in this work reduced the amount of carbohydrates offered, but only the cross-sectional study with non-drug-free athletes worked with drastic reductions, something that has already been proven not to be effective in reducing fat into bodybuilder athletes during the pre-contest phase [2]. Despite this, both studies also offer higher amounts of carbohydrates during the last three days of Peak Week. However, the study with drug-free athletes used greater amounts of carbohydrates compared to the cross-sectional study with non-drug-free athletes. Perhaps, athletes without the use of anabolic steroids may require greater amounts of carbohydrates to improve muscle appearance for competition day. However, more studies are needed to better evaluate these hypotheses brought here by the author. On another hand, it is easy to see that the cross-sectional study used lower caloric amounts compared to the case study, probably taking into account the use of anabolic steroids by the athletes described in the study [4], i.e., it seems that the amount of carbohydrates

offered at the cross-sectional study is subject to a carbohydrates severe restriction during the Peak week. In summary, to work with carbohydrates restriction, even during weight gain days seems interesting for non-drug-free athletes, while for drug-free athletes the amount of carbohydrates should also be periodized in the first days of Peak Week but increased considerably in the three days before the presentation.

Conclusion

During the Peak Week, athletes with or without the use of anabolic steroids restrict carbohydrates for the first three or four days, on the remaining days, the carbohydrates intake is increased to improve their appearance on the presentation day. However, non-drug-free athletes appear to be able to maintain lower amounts during the initial and final days of Peak Week compared to drug-free athletes. More articles and with a greater number of athletes are needed to provide guidelines on these quantities for both scenarios of bodybuilding athletes, including the quantities in grams per kilogram of body weight per day for prescribing this nutrient during Peak Week.

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