



Effects of creatine , amino acid and whey protein supplements on gaining weight in a bodybuilder

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Find Information	Abstract
The date of receipt of the search:	The Aim of this study was to determine the effects of creatine, amino acid and whey protein supplements on gaining weight in a bodybuilder the client of this study was a bodybuilder at Arnold classic two. The age, height, weight and body composition collected for the client and were taken by investigator which was a male bodybuilder with an age, height, weight and body composition fat percentage of 22 ± 2 years, (181.1 ± 2.2) cm, 87.0 ± 1.7 kg and body fat (6.7 ± 1.4), respectively, volunteered to participate in this study. The subject's effects of creatine, amino acid and whey protein supplements were measured, and the data analysed using pre and post-test differences by kilogram and percentage. The result for weight, protein, Carbohydrate, body fat mass, basal metabolic rate (BMR) and The fitness score were in post-test significantly better than pre-test. However, the result showed that weight improved by (1.4kg) and protein increased by (0.7kg), carbohydrate in pre and post-test was smaller which is a good for the Client and body fat mass improved by (0.7kg), basal metabolic rate was increase by (15 calories) and the fitness score raised by (1 point). analyzed and discussed. In light of the results. the researcher drew conclusions and recommendations.
Find the date of acceptance:	
key words (Creatine, amino acid, whey protein and body composition)	



Introduction

Nutritional intake is important for optimal sports and physical performance Saris et al. (1989). In addition to good nutrition is important to optimize training adaptations. For example, the ancient Greeks believed that high protein intake is important for athletes and athletes should consume diets that contain excessive amounts of meat (Roy 2008). These ideas are still common nowadays, especially with the endurance sports such as bodybuilding. It is common for endurance athletes to consume diets that are more than double the recommended levels of dietary protein Campbell et al. (2007). Based on hearsay and/or trial and error self-experimentation many athletes (especially strength athletes) are firmly convinced that high protein diets are advantageous (Lemon 1997).

The benefits of a diet plan is clear in the field of competition, where performance nutrition strategies are designed to help athletes, to do their best to reduce or delay the onset of factors that could cause fatigue (Maughan 2002). However, daily eating habits are probably even more important because they help athletes reach the platform from which they are willing to contribute (Burke 2007). Professional sports nutrition need to know how to evaluate the scientific merit of articles and advertisements about exercise and nutrition products, so that they can separate marketing hype from scientifically based training and nutrition practices (Kreider et al. 2010). An ergogenic aid is a practice or technique that is used to increase performance capacity, the efficiency of performing the workout, and the ability to recover after exercise, and / or the quality of training and promoting greater adaptation training (Kreider 2003).

Function of nutrition food provides nutrients that have one or more physiological or biometrical function in the body. Nutrients are usually divided into six different categories: carbohydrates, fats, proteins, vitamins, minerals, and water (Jeukendrup and Gleeson 2010).

*Carbohydrates: The name indicates the carbohydrate molecules built carbon (Carbo) and hydrogen (hydrate, water). General formula of carbohydrates is CH_2O (Marechal 2006).

*Protein: proteins: the amino acid blocks are all proteins. Amino acids are linked by what is known as the limits of peptides, and once connected, they are called a peptide (Damodaran 1996, Jeukendrup and Gleeson 2010).

*Fat: lipids are compounds, which are soluble in organic solvents such as acetone, ether and chloroform (Jeukendrup and Gleeson 2010).

The requirements of modern dietary were determined using largely sedentary individuals; because of this, the requirements are intended for the general population (Lemon 1997). Nevertheless, the past few years, significant amount of evidences have been accumulated on the athletes, specifically those involved at each end of the exercise intensity-time continuum, such as strength (weightlifting) to endurance (walking, running, swimming or cycling), suggesting that dietary proteins may be greater by 125% compared to inactive individuals. Further protein might be required for use as auxiliary fuel for endurance exercise and an additional sources of amino acids to build and maintain muscle mass or present in those who strength train (Lemon 1997).

Reducing energy diets are the aim of modern methods and approach is to control weight

Heymsfield et al. (2003). When it comes to weight loss diet, the health care providers have at least two food plan options. One of the options is a very low calorie diet (VLCD) using controlled liquid vitamin mineral enriched meal high in calories taken as the sole source of nutrients Wing and Jeffer (2012). Dietary fat has suffered and enjoyed strong fluctuations of scientific and public consensus in recent decades Phillips, Moore and Tang (2007).(

Bodybuilding is the process of developing muscle fibres through special training exercises, increase calorie diet and adequate rest. The process becomes a sport called competitive bodybuilding, where athletes show their physical body for judges and receive points for their muscular appearance. Many people believe that the end of the 20th and 21st century, bodybuilders have formed a unique subculture with its own set of values, beliefs, traditions, etc. Now, bodybuilding is considered a lifestyle, an attitude towards life, people, and the human body (Poss 2013). The world of muscle building is unique and insular. Resistance training athletes spend many hours in the gym in contact with others like-minded athletes, creating the potential for the exchange of ideas within and between the sports (Burke 2007).(

Currently bodybuilding has become the one of the fastest growing sport; it comes with various challenges and success (Sinclair 2005). There are various principals of a great bodybuilder, such as having good nutrition, well designed hours of training, right choice of supplements, preparation for competitions, and also a good frame of mind. A bodybuilder should never permit the use of supplements to overshadow whole food consumption. For a bodybuilder most confusing part about the sport is to ensure proper nutrition and diet.

There are twenty-two amino acids that have been identified as vital, for proper growth. The body contains fourteen of them but the other eight come from protein rich foods such as, meat, poultry, fish, eggs, milk, and cheese. Protein contains the materials to build muscles, blood, skin, hair, nails, and the internal organs. So for a bodybuilder to get oversized muscles they will have to take large quantities of protein (Nutrition 2013).(

Initial Assessment

Twelve participants were participated in this study the recruitment was announced throughout the gym, and the participants were required to take part in activity at least six times a week, or a similar activity with the similar exercise time. This study was carried out in the (Arnold classic two) gym in Kalar. Before the test, general information and data, such as size, body composition, weight and age were collected from the Participants. (See Table(

Table 1: The height, weight and body competition measured for the client

Bodybuilder	Result
Height (cm)	181.1 ± 2.2
Mass (kg)	87.2 ± 1.7

Need Analyses

Nutrition is the construction of the body. This is the most important part of bodybuilding. The body is improved by using exercise and good nutrition (see Table 5). Body composition with three daily meals for the clients were analysed, the clients were asked by the investigator to record meal and drink



intake for the duration of three days, the recorded data had to contain the name and amount of the food and drink taken. Then from these recorded data the body compositions were determined in the laboratory, body composition analysis shows the average body fat of the participants were (6.7 ± 1.4 kg), protein were (16.2 ± 2.3 kg $11.4 \sim 14.0$), and carbohydrates (40 ± 5.3 %). In addition, the analysis of body composition for weight control showed that the fat under control was (0.0 kg .(

Body building is the development process of muscle fibres through various techniques. It is produced by muscle conditioning, weight training, increased caloric intake, and rest. The workouts are designed to focus on certain types of muscles, and foods are consumed with the intention to build the body's metabolism and increase mass (Poss 2013). Due to the demands of the game, comparison between the client and professional body builder has an important role in the performance of bodybuilder, as the result of diet and weight gain client. Although relatively little research has examined body image in bodybuilders, a few studies suggest their higher levels of body image disturbance (Blouin and Goldfield (1995), Schwerin et al. (1996), Goldfield, Harper, and Blouin, 1998). Body building may be self-selected among a subset of persons with a form of psychopathology classified as body dysmorphic disorder. Highest of the calories in the diet should come from carbohydrates up to 60% to protect the reserves of carbohydrates and muscle function (Walberg-Rankin 1995). The important thing for a bodybuilder is the physical capacity and performance that is achieved (Wellard 2006). Recording information about the food intake can be useful in many ways, by doing the so, can cooperate for a better diet, increase

efficiency, help the body builder or the individual to reach the goals, and also offers motivation. (Tincello et al. 2007) suggests that a 3-day schedule is superior in terms of quality of data and found that three day food diary contains more specifics compared to 7 days log information food.

Determining Daily Caloric Requirements

The bodybuilder about 90 kg needs to 3420 calories for the day (Van Ness 2008), however for training needs to (3586 to 4802 calories)(see Table2). Furthermore, for increasing the calories, the client needs to eat more calories per day. Drink and foods rich of calories are milk, juice, protein shake, sauce, meat, vegetable, fruit, and sandwich. Additionally, calories and strength training leads to weight gain (Faber et al. (2008), Heyward et al. (1989), Tarmopolsky et al. (1988), Ziegler et al. (2001).(

Table 2: Energy intake during non-competitive training

Male bodybuilder	Energy (kcal)	Protein (g)	Protein (%)	Fat (%)
Faber et al. 2008	3586	200	22	39
Heyward et al. 1989	3590	215	25	26
Tarmopolsky et al. (1988)	4802	216	19	32

According to (Dulan 2013), 3420 BMR (Basil Metabolic Rate) is the number of calories a person can spend, if the person did no activity throughout the day. Male with weight of 195 pound = 88.4 kg needs 3420 calories per day. We determine that it is mainly sedentary during the day need for bodybuilders.

Table 3: The amount of body fat both of men and women.



Percent Body Fat		Multiplier
Men 10 to 14%	Women 14 to 18%	1.0
Men 14 to 20%	Women 18 to 28%	.95
Men 20 to 28%	Women 28 to 38%	.90
Men over 28%	Women over 38%	.85

The clients for this study were a bodybuilder and needed to gain muscle, and initially they took only 2105 ± 20 kcal, there are big gap between the recorded value of the clients and the recommended amount (see Table 2). Therefore giving whey protein, amino acid and creatine to the participants to increase the protein, the reason using these types of the supplements is to give the required protein to the clients, and these were the best type of supplements available in the market. Moreover, bodybuilders think supplements are needed to support their intensive workout routines and they are effective aids in fat loss and muscle gain (Brill and Keane 1994.)

Whey protein isolate has significant advantages for physically active people. It is quickly used by the muscles, which is a distinct advantage over other forms of whey protein, which tends to be used much slower rate (RASKIN 2010, Hudson, Daubert, and Foegeding 2000.)

After the finding (see Table 1) the participants needed to gain muscle, because they carbohydrate were lower than other bodybuilders. For increasing the number of carbohydrate and body weight, there various ways such as increasing the number of meals per day, taking protein between the meals, taking sport drinks particularly that drinking can help the client to increase carbohydrate, this is because sport drinks are a combination of water, carbohydrates, and electrolytes (Dulan 2013). Not only do sport drinks provide

the necessary fluids an active person needs, but they can also help maintain stamina in events or exercise sessions lasting longer than 60 minutes. In the past the subject took protein shake, however after the body composition results, recommendation were given to the participants to take (SCI) creatine with whey protein and (BCAA), which is a type of amino acid for gain muscle and improve performance.

Whey protein in particular is a rich source of leucine a branched chain amino acid shown to have beneficial effects on weight and body composition (Layman and Walker 2006, Qin et al. (2011), Devkota and Layman 2010, Halton and Hu 2004). Williams (2005) suggests that protein supplements for athletes can increase nitrogen retention and increase muscle mass to prevent protein catabolism during prolonged exercise to promote muscle glycogen resynthesis after exercise, and to prevent sports anemia promotes increased synthesis of myoglobin, hemoglobin, oxidative enzymes, and mitochondria during aerobic training. Marshall (2004) complex whey protein derived from whey is presented as a functional food with a number of health benefits. Further supplement whey improves muscle strength and body composition, cardiovascular disease and osteoporosis. Sullivan et al. (2000) creatine is one of the greatest common dietary supplements used by people in practically all levels of sports, to promote performance gains, strength and lean body mass. Moreover, it is the most widespread ergogenic, effective and safe in the world .

According to Kraemer and Volek (1999) ingestion of 20 to 25 g/d of creatine per day for five to seven days reduces the normal

decrease in strength or power output during short-term maximal bouts of exercise,

especially intermittent protocols. Creatine supplementation has not been shown to improve long-term aerobic exercise. Creatine can improve body mass in short-term for support that according to Balsom et al. (1993) found that the creatine supplementation in short-term for duration five to seven days the body mass increased 0.6 - 1.1 kg. Huso et al. (2002) found that (20 g/day for 4 days, and 2 g/day for 17 days given creatine to the participant and the result show that the total body mass increased (1.6 ± 0.5 kg, $P < 0.05$) after creatine. Carbohydrate oxidation was increased by creatine ($8.9 \pm 4.0\%$, $P < 0.05$). Further significant increases ($P < 0.05$) in fat-free mass were found after creatine.

Findings and Recommendations

The collected data were obtained from Emergency 24 hour's laboratory in kalar. A device known as (Body composition) was used to determine the body weight, height and body composition, the data are presented in Table 4, below.

Table 4: Show the differences between first and second body composition test

Client	Body composition first test	Supplementation	Body composition second test	Improve
Age	22 ± 2	Creatine (SCI)	22 ± 2	-
Height	181.1 ± 2.2 cm	Whey protein	181.3 ± 0.5	-
Weight	87.0 ± 1.7 kg	Amino acid (BCAA)	88.4 ± 1.8	1.4 kg
Protein	16.2 ± 2.3 kg		16.3 ± 2.5	0.1 kg
Carbohydrate	40 ± 5.3 %		40 ± 4.2 %	-
Body fat mass	6.7 ± 1.4		7.4 ± 1.7	0.7 kg
Basal metabolic rate (BMR)	2105 ± 20 kcal (2128-1808)		2120 ± 25 kcal (2156-1831)	15 kcal
The fitness score	96.2		97.3	1 score

The clients participated in this study for the duration of five weeks. Before taking a

supplement, the subject was tested for the body composition, this was the first test. Also, several other measurements, such as the height, weight of the participants conducted during the first, and the second test, which, was carried out after five weeks of the first test.

Then the results from the first test were compared with some of the data of professional bodybuilder, the result suggested that the client needed to gain weight. Based on the finding from the first experiment, creatine (SCI) and whey protein amino acid were recommended for the client, to gain the required weight. The subject followed the recommendation of the study for the duration of 5-weeks, to improve body weight and lifestyle.

After the subject took the given supplementations, and the second body composition test was carried out at the end of the 5 weeks, result from the second test showed that the body weight increased by (1.4 kg) and the body fat were also increased by (0.7 kg). In addition, the result indicated that the selected method to increase body weight of the clients were useful to achieve the goal.

The weight gain recommendation included to usage of supplementation, such as amino acid, whey protein and SCI creatine and also to increase the meal number, and also to take snacks between the meals to increase calories. These recommendations could help the participants to gain weight; this statement is supported by Blundell and Macdiarmid (1997). Many studies have been shown that protein intake and increase number of meal increases body weight according to Raben et al. (2002) body weight and fat mass increased in the sucrose group (by 1.6 and 1.3 kg). The subjects who expended fairly large amounts



of sucrose (28% of energy), had increased energy intake, body weight, fat mass, and blood pressure after 10 weeks Raben et al. (2002). Several studies have also shown that creatine supplementation might increase the total body weight and / or lean mass Balsom et al. (1993), Balsom et al. (1995), Earnest et al. (1995), Greenhaff et al. (1993), Volek et al. (1997), Stout et al. (1997). The result of this study showed that the body mass increased by (1.4) kg from (87.0 + 1.7 kg to 88.4 ± 1.8), and fat free increased by 0.7 kg as seen in (Table 4). After the clients eating snacks between each meal, this meant that the subject were getting more carbohydrate before training, as well as taking benefiting from sport drinks. These resulted in weight increment of the client.

Percentages of body fat values of athletes differ by the gender of the player and the sport itself. Male athletes with the lowest approximations of fat (less than 6%) include middle-distance and long-distance bodybuilders and runners, while the male gymnasts, boxers, basketball, cycling, and average between sprinters 6% to 15% body fat. Ordering food after exercise is to supply enough carbohydrates and energy to replace muscle glycogen and ensure rapid recovery. If a bodybuilder depletes glycogen after exercise, a carbohydrate intake of 1.5 g/ kg body weight during the first 30 minutes and again every 2 hours for 4-6 hours will be enough to replace reserves glycogen. Protein after exercise increased supply of amino acids for building and repairing muscle tissue. Accordingly, a bodybuilder should consume a mixed meal providing protein, carbohydrates, fats and shortly after an intense training session or competition.

Communication of findings:

Dear participants,

Nutrition is often defined as the total process of metabolism, absorption, ingestion, and digestion of food and the subsequent assimilation of nutrients in the tissues Jeukendru and Gleeson (2010). The largest contributor to good health is a good nutrition. With proper nutrition, weight tends to be less of a problem. (Rodriguez, Dimarco, and Langley 2009). Generally, many athletes in the sport will need to increase or decrease the weight of the body to meet the demands of the sport. In both cases, the weight change must be done slowly during the off-season or at the beginning of the season, or before the start of the competition Rodriguez et al. (2009). Weight gain can be achieved by the combination of the additional energy in the diet (500 to 1000 kcal per day) with increased strength training, promotes growth of the desired tissue Rodriguez et al. (2009). How long weight gain occurs depends on the genetic nature of the athlete, the degree of positive energy balance, the number of days of rest and recovery week, and type of training exercise .

Training and proper diet would be recommended in order to carry out power performance during training, and avoid injuries. Furthermore, nutrition can help athletes to maintain a healthy diet, while reducing the total energy intake to allow gradual weight loss (approximately 1 to 2 lbs / wk or 0.5 to 1.0 kg / wk.)

Training and competition can spend higher energy especially for bodybuilder, therefore bodybuilders require more energy. Weight training is an anaerobic resistance activity, which generally uses less energy over a period of training than as aerobic activity continues. However, reports of energy intake for male bodybuilders show they consume similar for many endurance athlete quantities Walberg-



Rankin (1995). The average energy consumption reported in several studies for male bodybuilders are between 3,500 and 4,800 kcal. d-1 (39-60 kcal. kg-1) during the training periods. According to (Kleiner, Bazzarre, and Litchford 1990), 55% of the male and 75% of female bodybuilders began restricting their diet between 2 to 4 months before the competition.

There are several ways to gain weight; first approach to gain weight is from a healthy diet, such as meals that are known to be rich in fibre, minerals, low fat and vitamins. If the target is to build a lean and muscular physique, then it is recommended not to intake a high amount of sweets, since they contain rich amount of sugar and fat, however this does not mean they provide the required energy to gain weight. Secondly, food creatine can have a good impact on the body, which can make it fitter, on the other hand consuming a higher amount of calories than the sports requirements can result in unhealthy lifestyle .

Eating plays an important role in bodybuilding and supplements are the key factors in bodybuilding. Furthermore, the lifestyle of bodybuilders requires a lot of discipline; this is to achieve a level of performance and good nutrition session (Vinturiş 2009). Energy and protein are important and it is requirement to help building or repair muscle tissue. Frequent consumption of small meals, is also necessary during the day, which should include proteins with a good source of fibre and complex carbohydrates to be able to stabilize insulin levels and maintain a high level of energy. Nutrition is mainly determined by what, when, how often and how much the bodybuilder eats. Nutritional supplements play an important role in the diet of an athlete. Protein supplements have the ability

to sustain the recovery, repair and growth of muscle tissue. Supplements are beneficial at any time of the day is taken, but the greatest benefits are obtained immediately after exercise, because the body is able to metabolize more nutrients than any other time.

Therefore from the finding of the experiment, suggests that further weight is required to be gained, this goal can be achieved by taking more carbohydrates with creatine and whey protein and amino acid, because these supplements could improve the body shape and weight, also eating more foods with using a proper diet, this can help with weight gain. The tables below are the diet plan, note that each diet plan is associated with special training program.

Table 5: Daily diet for competitive bodybuilder training 2hours a day for 6 times a week

Time	Food	Protein
8.00 breakfast	One glass of Water One cup coffee A slice pineapple Two tables of hydrochloric acid 250 mg vitamin B6 Four boiled eggs	52g
12.30 lunch	200 grams of fish or beef, veal, liver (in 3 weekdays) Two slices of bread Two plates of brown rice or baked potatoes Small tomato or green beans (in 3 weekdays) One glass of water	40g
13.30	One apple or Two pears	
16.00	Snack 20 g (1 tablespoon) water-packed tuna	5g
19.30	Dinner Fish or chicken Vegetables and Salad+ One glass of water	30g
	Total protein	127g

Table 6: Meal plan for off-season period

Time	Food	Protein
7.35	One spoon whey protein in water	20g
8.10 breakfast	Large bowl whole wheat breakfast cereal with 1/3 pint skimmed milk	15g
	1/2 portion MRP in water	21g
9.10	20ml aloe Vera gel 100ml orange juice + 2g glutamine + 1 teaspoon olive oil + Tea/coffee + skimmed milk + sugar + 2-5g Creatine monohydrate + Fruit	
10.35	High protein supplement bar	25g
	1/2 scoop whey protein in water	10g
12.30	Tuna (95g) + 1 teaspoon low fat natural yoghurt	27g
	1/2 small chicken breast (80g)	18g
	4 slices whole meal bread + olive oil spread	7g
	Huge salad Low fat yoghurt + 4-6 amino acid capsules	
14.20	1 scoop whey protein powder in water Tea/coffee + skimmed milk + Fruit	20g
15.30	1/2 portion MRP in water	21g
17.30	Complete nutrition electrolyte replacement drink + 2-4 rice cakes	13g
17.45	Pre-workout drink	
TRAIN		
18.45 (after training)	2 scoops whey protein in water	40g
19.30	Mackerel (95g)	20g
	1/2 small chicken breast (80g)	18g
	Either 2 medium jacket potatoes or 200g boiled brown rice or 350g boiled whole wheat pasta	7g
	Vegetables Low fat yoghurt 4-6 amino acid capsules	
20.30	Mug green tea with lemon juice	
22.00	1 MRP in water Fruit + 4 rice cakes	42g
23.30	GABA in low sugar fruit cordial 1 scoop whey protein in water	20g
23.30 bed		
Middle of night (if wake)	1 scoop whey protein in water	20g
	TOTAL PROTEIN	364g

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