

Use of Athlete Supplements: A Case Study of Amateur Boxing Athletes in Indonesia

Trisnar Adi Prabowo*, Tomoliyus, Awan Hariono, Djoko Pekik Irianto, Endang Rini Sukamti, Danardono, Amri Hartanto

Department of Sport Science, Yogyakarta State University, Yogyakarta, Indonesia

Abstract: This study aimed to investigate the use of supplements among amateur boxers, including the types and brands of supplements and the ways and reasons for taking them. The sample is divided into three categories: elite, youth, and junior. The research method is a survey using a Google form which is distributed to all amateur boxers. The results showed that 200 amateur boxers used supplements, including 125 elite amateur boxers, 55 youth amateur boxers, and 20 junior amateur boxers. A total of 130 boxers received supplements from coaches, officials, administrators, and Indonesian National Sports Committee (KONI). A total of 111 amateur boxers used only one type of supplement. The most widely used types of supplements are multivitamins and minerals. A total of 102 amateur boxers used supplements within 4-5 months before the competition. Amateur boxers can feel good effects after using supplements. However, counseling about sports nutrition by doctors and nutritionists needs to be done so that amateur boxers can choose the right supplements and be more careful in using these supplements. These findings can be a reference for coaches and athletes to determine the right supplements to regulate nutrition better.

Keywords: supplements, amateur boxers, athletes.

在业余拳击运动员中使用补充剂: 印度尼西亚业余拳击运动员的案例研究

摘要: 业余拳击手需要消耗食物来保持身体健康。另一方面, 业余拳击手需要通过限制饮食来保持体重以适应比赛级别。使用补充剂是帮助满足营养和保持体重的正确解决方案。该研究的目的是调查业余拳击手使用补充剂的情况, 包括补充剂的类型和品牌以及服用它们的方式和原因。样本分为 3 类, 即精英、青年和初级。研究方法是使用分发给所有业余拳击手的谷歌表格进行的调查。结果显示, 有 200 名业余拳击手使用补充剂, 即 125 名精英业余拳击手、55 名青少年业余拳击手和 20 名青少年业余拳击手。共有 130 名拳击手从教练、官员、行政人员和柯尼那里获得了补充。共有 111 名业余拳击手仅使用一种补充剂。最广泛使用的补充剂类型是多种维生素和矿物质。共有 102 名业余拳击手在比赛前 4-5 个月使用补充剂。业余拳击手在使用补充剂后可以感受到良好的效果。但是, 需要医生和营养师对运动营养进行咨询, 以便业余拳击手可以选择合适的补充剂, 并在使用这些补充剂时更加小心。

关键词: 补充剂, 业余拳击手, 运动员。

1. Introduction

Boxing is a type of sport that requires good physical ability. One of the important components for supporting a boxer's physical ability is adequate and balanced nutrition [1]. Nutrition for boxers also has benefits for maintaining fitness after training with high

intensity accompanied by physical impacts [2]. Therefore, the boxer can recover his physical condition to train the next day. Food is the best way to get many nutrients [3]. But boxing is a sport that is limited by weight, so boxers should not overeat it so that their weight can be included in the competition category.

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About the authors: Trisnar Adi Prabowo, Tomoliyus, Awan Hariono, Djoko Pekik Irianto, Endang Rini Sukamti, Danardono, Amri Hartanto, Department of Sport Science, Yogyakarta State University, Yogyakarta, Indonesia

Corresponding author Trisnar Adi Prabowo, trisnaradi.2020@student.uny.ac.id

One of the effective ways for boxers to get adequate and balanced nutrition but still limited food intake is to use supplements [4].

Supplements are defined as food categories that combine into a single unit consisting of several compositions of food ingredients including vitamins, minerals, herbs and plant components, amino acids. Several studies have proven that the use of supplements has benefits in helping improve the performance of martial arts athletes [5]-[7]. As in boxing athletes, the use of supplements is common to improve performance. Many athletes believe that just a normal diet will not be enough to help achieve and maintain maximum performance [8]. Additionally, practicality can be the main factor for boxers to use supplements.

Boxing level is divided into two, amateur level and professional level. At the amateur level, boxers only compete in 3 rounds with a knockout system until it is determined who becomes the champion, while at the professional level, boxers compete in 4-12 rounds but only in one match [9]. Research on the use of supplements by boxing athletes has been carried out by other researchers, research on the use of supplements to lose weight [10]-[11] and research on the use of supplements to improve boxer performance [7], [12]-[14]. After investigating the nutritional profile and physical development of Lithuanian boxers in [15], it was reported about the necessity to increase the intake of essential amino acid supplements to improve physical development. However, these studies do not clearly state the status of boxers, whether they are amateur or professional boxers.

In Indonesia, most boxers are found to use carnitine-type supplements to lose weight because it is too difficult to manage their weight [11]. Even so, the author believes that they are still using other

supplements of unknown type. Good and balanced nutrition will result in successful boxer achievements at the amateur level, as well as the beginning for every boxer who wants to achieve a successful career at the professional level. Therefore, it is necessary to research the use of supplements for amateur boxers. This study aimed to investigate the use of supplements among amateur boxers including the types and brands of supplements and the ways and reasons for taking them. In addition, in this study, the author will also provide advice to amateur boxers to better regulate nutrition.

2. Material and Method

This type of research is a survey. In this case, researchers want to know what types of supplements are consumed by amateur boxers. In Indonesia, eight types of supplements are commonly sold: gainer supplements, whey protein, pre-workout, creatine, fat burners, BCAA (Branched Chain Amino Acid), amino, and multivitamins and minerals. These types of supplements were declared by BPOM (Drug and Food Regulatory Agency) as safe and halal supplements for use by Indonesians.

2.1. Research Subject

The subjects of this study were amateur boxers in Indonesia who were classified according to the rules of the IBA (International Boxing Association) as Elite (19-40 years old), Youth (17-18 years old), and Junior (15-16 years old). The survey began in early July until early August 2022. Amateur boxers who were respondents when this research was conducted were undergoing training centers for championships at the regional, national, or international level. Data on height and weight for each category are presented in Table 1.

Table 1 Data on height, weight, and body age of boxers for each category

Variable	Category					
	Elite		Youth		Junior	
	Man (n = 116)	Woman (n = 9)	Man (n = 46)	Woman (n = 9)	Man (n = 15)	Woman (n = 5)
Height (m)	± 1.72	± 1.61	± 1.68	± 1.58	± 1.65	± 1.56
Weight (kg)	± 62.97	± 54.88	± 59.81	± 51.22	± 52.26	± 51.60
Age (years)	± 23.6	± 23.5	± 17.4	± 17.6	± 15.2	± 15.4

2.2. Research Procedure

The Google form was the instrument used in this research. The online data collection is more effective and efficient because data must be filled in completely before being sent and one respondent can only fill out one questionnaire (one email is only for one respondent). These instruments are distributed to coaches, gym, or gym team officials to be filled out by every amateur boxer who is under their guidance. In this instrument, the first question is whether the boxer uses supplements, then the answer choices are "YES" or "NO". After the boxers answered "YES", the next question was about the characteristics of the boxers, the

classification of boxers according to the IBA rules (elite/youth/junior); then, the next question was about the use of supplements for boxers.

The question about the use of supplements is a modified result of several previous studies [16]-[20]. The researchers also gave answers to these questions in the form of multiple choices where one correct answer must be selected and a check mark according to what was experienced by each boxer, and boxers were also given the freedom to answer with other answers.

3. Results and Discussion

The survey results revealed that 20 boxers in the

junior category, 55 boxers in the youth category and 125 boxers in the elite category used supplements

during their training camps to face the competition. The complete research results are given in Table 2.

Table 2 Research results: how to get supplements

Where did you get this supplement from?	Elite (n = 125)	Youth (n = 55)	Junior (n = 20)
Coaches, administrators, officials, KONI	76	34	20
GYM/club/training center	32	21	-
Friends who use the same supplement	17	-	-
Do you use more than 1 type of supplement?	Elite (n = 125)	Youth (n = 55)	Junior (n = 20)
Yes	68	21	-
No	57	34	20
What type of supplement do you use?	Elite (n = 125)	Youth (n = 55)	Junior (n = 20)
Creatine	15	4	-
Whey Protein	17	-	-
Fat Burner	39	20	-
BCAA	26	2	-
Amino	13	2	-
Multivitamins and minerals	108	49	20
How long have you been using these supplements?	Elite (n = 125)	Youth (n = 55)	Junior (n = 20)
2 - 3 months	27	13	9
4-5 months	65	26	11
6 - 7 months	33	16	-
How often do you use supplements?	Elite (n = 125)	Youth (n = 55)	Junior (n = 20)
Every day	-	-	-
Only during practice	109	42	13
If necessary	16	13	7
Why do you use supplements?	Elite (n = 125)	Youth (n = 55)	Junior (n = 20)
Increase muscle mass	20	-	-
Improve and maintain fitness	107	46	17
Lose and maintain weight	104	42	18
Increase energy during training or competition	77	30	13
Help the recovery process by feeling tired after training or competition	81	27	11
Help improve performance	53	27	7
Help heal injuries	25	8	-
Increase self-confidence and motivation	47	9	2
Do you feel the benefits after using the supplement?	Elite (n = 125)	Youth (n = 55)	Junior (n = 20)
Yes	123	55	19
No	-	-	1
Not Sure	2	-	-
Do you know the composition/basic ingredients of the supplement?	Elite (n = 125)	Youth (n = 55)	Junior (n = 20)
Yes	98	33	11
No	-	-	-
Not Sure	27	22	9
Do you know the bad effects/side effects of these supplements?	Elite (n = 125)	Youth (n = 55)	Junior (n = 20)
Yes	42	19	5
No	-	-	-
Not Sure	83	36	15
Are you planning to use the supplement again in the long term?	Elite (n = 125)	Youth (n = 55)	Junior (n = 20)
Yes	-	-	-
No	35	18	6
Not Sure	90	37	14

The survey results show that most of them received supplements from coaches, officials, administrators or KONI (Indonesian National Sports Committee). A small part of them get supplements by buying them from gyms, exercise sites, gyms and recommendations from friends who have used the same supplements.

Furthermore, the survey results show that there are boxers who use more than one type of supplements. Boxers in all categories most widely used multivitamins and mineral supplements.

The results of the next survey were the data that show the duration of supplement use in months. The

results show that the duration of supplement use is 3-4 months during training camps for each category. Based on the results, amateur boxers take supplements only when there is training.

Boxers use supplements for various reasons. In this study, the authors give the freedom to boxers to choose more than one answer according to boxer's needs. In addition, the researchers also provided a column for other answers if the boxers have their own reasons for using supplements. Their main reason for using supplements is to improve and maintain fitness and help lose and maintain weight so that they can compete

according to the class they will attend.

Many boxers feel benefits after consuming supplements according to the type, duration and frequency of supplement use. But there are some boxers who are hesitant and do not feel the benefits of using supplements even with a few boxers. Boxers also understand a lot about the composition or ingredients in the supplement. But the number of boxers who are doubtful about the negative effects of using supplements is also quite large. Based on the survey, there are boxers who know about the dangers that arise when using supplements exceeding the prescribed dose. Therefore, in the use of supplements for a long time, boxers for all three categories prefer to rethink using the same supplements, or change the type, or do not use supplements at all.

The use of supplements for elite category athletes is often found and proven to help improve performance [21]-[22]. According to the survey results, many elite boxers in Indonesia use supplements during the upcoming competition period. Additionally, boxers in the youth and junior categories also used supplements during the competition period, but not as much as boxers in the elite category. For athletes who have entered the elite category, the main goal is to improve their achievements and maintain their career as champions. Unlike boxers in the junior and youth categories, they still need experience in competing and have not been targeted as champions [23]. The use of supplements is needed by elite boxers to improve and maintain their best performance.

Of the 200 amateur boxers who use supplements, there are 177 male boxers and 23 female boxers. That is, the use of supplements by male boxers is much greater than by female boxers [24]. Indonesian female boxers still think that the use of supplements can affect the menstrual cycle and the hormone estrogen [25]. Therefore, the use of multivitamin and mineral supplements is considered sufficient for the nutritional needs to improve and maintain fitness, lose and maintain weight.

The types of supplements used by boxers vary. The types of supplements that are most widely used by boxers are multivitamins and minerals. They assume that multivitamins and minerals are supplements safe for long-term use, although there is little evidence regarding this [26]. All boxers in the junior category used multivitamin and mineral supplements. For 55 boxers of the youth category, 49 boxers used this type of supplement. This proves that multivitamin and mineral supplements are considered appropriate to fulfill their nutrition [27]. Boxers in all categories believe that they can feel good effects after using multivitamin and mineral supplements. This conforms to the research [28], where the use of supplements can increase endurance, while endurance is needed for all boxers. In addition, the use of multivitamin and mineral

supplements is also unconsumed every day but only when there is exercise or when necessary so that the body does not store many vitamins and minerals in vain. Other types of supplements used in addition to multivitamins and minerals for amateur boxers are fat burners, BCAAs (branched chain amino acids), creatine, whey protein, and amino acids. The fat burn supplement (fat burner) is indeed the most frequently used by martial arts athletes for losing weight [10]-[11]. However, in Indonesia, the number of boxers who use fat burner supplements is not as many as boxers who use multivitamin and mineral supplements. This is because some boxers in Indonesia still use sauna jackets to lose weight during training and reduce the number of calories they eat.

According to survey results, the main reason boxers in Indonesia use supplements is to improve and maintain fitness, lose and maintain weight. For boxers, physical fitness is an important component to improving their physical condition and achievement. Without good physical fitness, boxers cannot increase their speed, strength, agility, flexibility and power [29]. Good physical fitness also plays an important role in boxers recovering their body [30]. Physical contact sports have a high risk of injury, so supplements containing amino acids, protein, antioxidants, creatine and omega 3 can help speed up the recovery process from injury [31]. In addition, boxing is a sport that requires weight. Therefore, the weight needs to be adjusted to the class that will be competed and then it should be maintained until the match starts.

The use of supplements for boxing athletes is essential to compete competitively. However, the risk of using supplements for the body will always exist if you are not careful in using them [32], so every boxer should have nutrition knowledge. Based on survey data, boxers from all three categories mostly understand the supplement's composition, but many boxers also have doubts about the harmful effects of the supplement. Therefore, counseling about supplements and nutrition is highly recommended so as not to always depend on supplements. The best way to manage nutrition is to consult a doctor or nutritionist with the approval of a trainer. Amateur boxing was the first step to starting his professional career. Before beginning a professional career, amateur boxers must find a suitable nutritional menu for themselves, and of course, the perception of nutrition for amateur boxers will be different [33]. If the use of supplements is not supervised, it is potentially positive to use doping and may harm the boxer's body. In addition, there is a need for counseling to increase boxers' knowledge about nutrition and weekly or monthly control books on the nutritional status of amateur boxers.

4. Conclusion

A survey of the use of supplements by amateur

boxers in various categories (elite, youth, junior) was conducted. Elite amateur boxers mostly use supplements. Almost all elite amateur boxers use a type of multivitamin and mineral supplement, while some use other supplements. Amateur boxers get these supplements from coaches, officials, administrators or KONI, training venues, and friends who use the same supplements. Although boxers can feel good effects after taking supplements, which can improve, maintain fitness, lose and maintain weight, the use of supplements by amateur boxers needs to be under direct supervision from a doctor or nutritionist. Using more than one type of supplement may be damaging to the boxer's body condition.

This research differs from other studies. This study focuses on Indonesian amateur boxing athletes in the use of supplements including types and brands of supplements, and the ways and reasons for taking them. The subjects of this study were amateur boxers in Indonesia who were classified according to the rules of the IBA (International Boxing Association), namely elite (19-40 years old), youth (17-18 years old), and junior (15-16 years old).

This research is the basis for the decisions of parents, coaches, and athletes to quickly understand the types of supplements that are appropriate and good to use as a substitute for energy intake. Moreover, the coach must understand the supplements to avoid doping in competitions/matches. Providing proper nutrition to adolescent athletes will impact the athlete's appearance during training and competition. Nutrition will greatly help athletes improve performance through energy generated, delay fatigue, increase strength and focus, and speed up recovery. The limitation of the research is that the respondents when filling out the questionnaire were not directly monitored.

The expected outcome of this research is the increasing awareness of amateur boxers on the importance of regulating their diet without having to use supplements every day. If an amateur boxer uses supplements, he must first consult a doctor or nutritionist, be more careful in choosing supplements, and, more importantly, get approval from the coach.

Athletes should gain knowledge about supplements. Trainers should also get sufficient information or knowledge about the effects, costs, benefits, and risks of using supplements to be the right source of information for athletes in making decisions to take supplements.

Further studies are needed on boxing athletes to examine the role of supplement consumption in the athlete's achievement and fitness level.

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