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# Amateur Bodybuilders and Their Perceptions of Supplements: A Qualitative Analysis

*Original Research*

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**Abstract**

**Introduction**: Bodybuilding is a sport with an emphasis on aesthetic appearance, and therefore performance in the sport is unique in its emphasis on body image perceptions, and it centers on creating a perfectly proportioned figure of muscle.[1-2] The present study sought to examine supplement perceptions, knowledge, and attitudes within the community of male amateur bodybuilders.

**Methods**: Interviews were conducted with thirty (N=30) amateur male bodybuilders ranging in age from 20 to 34 years old (M = 22.93, SD = 3.42) who had been engaged in the sport between 2 and 15 years (M = 3.31, SD = 2.82).

**Results**: Three major themes emerged from the interviews. Amateur male bodybuilders use supplements: (1) to help achieve an ideal body; (2) to increase strength and enhance performance; and (3) because of a belief that the positive benefits outweigh the possible negative consequences. Several sub-themes were present in each major theme.

**Conclusions**: In order to reach a tier of competition they deem satisfactory, and to reach the image they desire, amateur male bodybuilders believe supplementation is a requirement.

***Key Words***: Performance, Nutrition, Ideal Body

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## Introduction

The global dietary supplement industry was an estimated $140.3 billion in 2020 with a continued, predicted annual growth of over 8%.[3] Studies have long held that high percentages of athletes use supplements, with several studies since 2002 finding ranges from 48% to 81%.[4-5] Within the athlete population, bodybuilders in particular use supplements at a high frequency.[6] In general, supplement use among athletes is often misinformed, and could even be dangerous. In a population with such high usage rates, examining the supplement usage behavior among amateur bodybuilders is needed. Currently, there is a lack of research concentrating on the attitudes, knowledge, and perceptions of amateur bodybuilders and their decisions to use supplements. Recent evidence suggests a continued growth in popularity of the sport.[7-8]

As a competition and sport, bodybuilding relies on creating a muscular configuration which is aesthetically pleasing.[2] This includes specifically proportioned bodies in terms of body fat, symmetry, mass, and muscular definition.[9] One must be acutely aware of their own anatomy in order to achieve this specified aesthetic.[9] The terminal goal of bodybuilding is described as the creation of an extreme mesomorphic physique, which is one of three general body type classifications and is ideal for bodybuilding due to tis relatively larger bones and ability to hold muscle mass.[10] Similar to other sports, it is not uncommon for competitors to employ tactics which focus squarely on the terminal goal of creating the ideal body image.[7,11] A typical tactic for bodybuilders is to include nutritional supplements in their training regimen. "Supplements" is all-inclusive term which includes: vitamins, minerals, herbs, amino acids, extracts, or concentrates in the form of tablets, capsules, liquids, powders, bars, soft gels, or gel caps.[12] Extensive

research of supplements shows that athletes and non-athletes alike believe they are necessary to increase performance and they use supplements liberally.[6,13-15] Additionally, studies have shown similar patterns of supplementation between elite and amateur athletes that are observed with bodybuilders.[16-17]

Amateur bodybuilders, like most amateur athletes, are influenced by professionals in the industry, and as professionals were being paid to promote supplement use, it was a natural reaction for amateurs to believe supplement use was needed for improved training and recovery.[18] A concerning and longstanding issue related to supplements is their lack of regulation, their limited research, and a bevy of misleading claims regarding their effectiveness.[19-20] There are many factors, and oftentimes combinations of factors, related to a decision to include supplement use in a training regimen. Factors such as increasing strength and performance, aiding in recovery, increasing energy during training, weight loss, fulfillment of specific nutritional demands, and fueling muscle growth are all examples found in supplement use research.[13-14,16-17, 21-22] Many believe that when they purchase a supplement they are purchasing a legitimate and safe product. The reality is that the majority of the supplement industry does not fall under the purview of Food and Drug Administration (FDA) restrictions. This means many are not tested under the standards of other items we consume. USADA warns that confusion often arises because many manufacturers have employed tactics of mislabeling, including unproven claims, omitting ingredients, and/or using misleading names.[23] This is specifically concerning when it has been shown that athletes tend to trust claims from a manufacturer about their products.[24] Studies have found that athletes use various sources when determining supplement use. Often, they will rely on themselves,[21] but they also seek out their peers, media regarding supplements, and nutritional professionals.[5] The issue lies in knowing what a credible source of information is when so much of the industry goes unregulated. Studies have consistently shown that athletes lack knowledge when it comes to choosing the correct supplements for their needs.[15-16,21]

The purpose of the study was to examine the perceptions, knowledge, and attitudes related to supplementation within the community of male amateur bodybuilders. This investigation will reveal a deeper understanding of the choices that amateur bodybuilders make in regards to their behavior to utilize supplements. Focusing specifically on male amateur bodybuilders will aid in uncovering more evident traits as the focus is on a more homogeneous group. While there is currently research focusing on the effects bodybuilders experience from the use of supplements, there is a dearth of research which scrutinizes their perceptions, knowledge, and attitudes – especially among amateurs.

**Methods**

The study utilizes a qualitative approach to better comprehend the supplementation phenomena within the amateur bodybuilding community, and because there is currently little information on this phenomenon. In order to best take this approach, researchers employed a collective case study approach, as the goal of such research is broadly defined as understanding beliefs, feelings, and assumptions.[25] This approach is also recommended since the focus is on answering how or why questions.[26] An additional advantage of this method is that is encourages participants to provide accounts of their experiences which are both detailed and descriptive.[27] In line with recommendations, an inductive process of developing codes, categories and themes was applied as opposed to forcing predetermined classifications.[28]

*Participants*

Researchers used purposeful sampling in order to solicit participants due the homogenous nature of the sample and a relative lack of qualified participants in the area.[25] In order to be considered qualified participants, inclusion criteria were formed to ensure that participants actually met the definition of amateur, that they were preparing to compete in the next calendar year, and that they were adult males since this would be most generalizable due to the high male representation in the sport.[29] Criteria that would have excluded participants based on amateur status included, but was not limited to, having previously won an accredited competition at any level.

Once approval was received from the Institutional Review Board of the university, flyers including relevant research and contact information were posted at local gyms to recruit participants. Initial screening of participants had them answer questions to ensure they met the inclusion criteria before proceeding to the interviews. Thirty-three individuals contacted the primary researcher, and each met the inclusion criteria. Eventually, three participants declined the interviews and a total of thirty (N=30) agreed

to interviews after agreeing to documentation regarding informed consent. Participants were not compensated for their engagement in the research.

The sample included thirty (N = 30) adult male amateur bodybuilders, ranging from 20 to 34 years old (M = 22.93, SD = 3.42). Their range of years engaged in bodybuilding was 2 to 15 (M = 3.31, SD = 2.82). Initial involvement in bodybuilding ranged from 15 to 26 years (M = 18.40, SD = 3.25). Time spent training per day ranged from 45 to 120 minutes (M = 77.16, SD = 26.84). In order to hit saturation in this type of qualitative work, researchers conducted between twenty and thirty interviews.[25] With confidentiality in mind, pseudonyms are used in the results and participants were assured that the primary researcher would be the only person with data access.

*Protocol*

Researchers developed an interview guide with four sections. The first section included basic information about the study as well as informed consent documentation for participants. The second section included broad questions regarding themselves and their experience with bodybuilding. The third section included open-ended questions focused specifically on supplement use. The fourth section provided participants with the opportunity to discuss anything that had not previously been addressed. The semi-structured nature of the interviews allowed for participants, in part, to determine where the interview went at various points so it felt more like a conversation. Subsequent transcripts were coded prior to the next interview, allowing for the interview process to evolve with more relevant questions and probes.

*Statistical Analysis*

Interviews ranged from 58 to 63 minutes (M = 60.17, SD = 1.12), took place at the participants' local gym, and each interview underwent transcription by researchers. Additionally, Dragon Dictation software was employed for analyzing hand-written field notes. all of the audiotapes were transcribed verbatim by the researcher. In addition, hand-written field notes were taken and Dragon Dictation software through an Apple iPad was utilized for each interview process.

Following transcription, three phases of coding took place per the recommendations[28] – open coding, axial coding, and domain analysis. Open coding is an inductive process including line-by-line analysis meant to garner as many codes and categories as possible. The process continues as each subsequent item is compared to previous ones to determine its best fit.[25] Axial coding sought to create higher order categories from the open coding phase to develop more identifiable patterns and relationships.[28] This process was repeated until larger themes could be determined. This process includes requires some accountability as there is inherent bias towards conformation on the part of the researcher.[25] In order to achieve this, participants were consulted to help confirm codes, categories, and larger themes. Each participant was given the opportunity to review and provide feedback, although none requested any changes. Lastly, domain analysis sought to arrange the data hierarchically through themes and subthemes. To do so, observations, interviews, and field notes all had to be investigated. This study specifically applied Spradley's "Rationale X is a reason for doing Y".[30] With this rationale in mind, the research asserted that a bodybuilder's perception of their image influenced their decision to take supplements. In order to do this, a participant's response had to reflect the domain it was defined as part of, as opposed to fitting into a pre-determined set of categories by the researcher.[31] Primary categories, as well as subsets in each domain were identified in order to create a taxonomy to discern any relationship between the terms.[31] In this particular analysis, direct quotes from participants were an important component of the analysis in terms of providing summarization regarding supplement use.[31] Finally, relationships between all categories and specific research questions were ascertained to best characterize supplement use for adult male, amateur bodybuilders.

**Results**

Three primary themes emerged related to the reasons amateur bodybuilders take supplements: (1) to achieve the ideal body; (2) to improve strength and increase performance; and (3) a belief that positive benefits outweigh potentially negative consequences. Pseudonyms are used for all participants.

Within the first primary theme of achieving the ideal body, eight sub-themes emerged., which are displayed in Table 1.

| Table 1 | |
|---|---|
| *Sub-themes for achieving an ideal body* | |
| 1 | Bodybuilders were dissatisfied with their bodies |
| 2 | Dissatisfaction may be broad or focus on specific bodily aspects |
| 3 | Dissatisfaction is rooted in the desire to attain "the perfect body" |
| 4 | Body image perception is based on the views of the individual and others |
| 5 | Few bodybuilders are ever satisfied since their idea is unattainable |
| 6 | Bodybuilders invest significant time and energy, to the point of obsession |
| 7 | Bodybuilders emphasive nutrition as a way to reach their ideal |
| 8 | Bodybuilders use various legal and illegal supplements to reach their ideal |

The first sub-theme is body image dissatisfaction, which was found with all participants. Frank expressed what was a popular sentiment with most participants, "On a scale of one to ten, I would say I am only at a six in terms of happiness in my overall muscle appearance".[32] Frank regularly uses supplements and had lifted six times per week for three years. Nick commented, "There is always room for improvement in my body… Right now, it is just not where I want it to be… The moment I am satisfied in my appearance is the moment I no longer get better".[32] Nick also relayed a common theme that he, "acknowledged daily" his own dissatisfaction simply by viewing his own reflection in the mirror. He added, "I know that I look fine for a normal person, or even a fit person, but I want to look great as a bodybuilder".[32] The drive to emulate professional bodybuilders appears to be a significant underlying cause of body dissatisfaction.

A second sub-theme is that body image dissatisfaction existed in both broad and specific aspects for bodybuilders. Broadly speaking, dissatisfaction could be classified into two categories: (a) insufficient muscle size or tone and (b) a desire to decrease body fat while simultaneously increasing bodyweight. Each of these broad areas were noted in some way by each participant. While dissatisfaction with size and/or tone was described by all, it could be very specific for each participant to which part of the body they were focused. Steve's dissatisfaction focused on leg development, illustrated by his comment, "I am completely pleased with everything other than my legs. They are not little, but compared to my upper body I look disproportioned. Really, I feel proportional in my legs, but I want more muscle mass in my hams and more definition in my quads".[32] This type of comment was indicative of participants' comments regarding specific areas. In terms of increasing weight, Luke discussed the desire to "add quality weight".[32] Many made a similar distinction, as they stressed the need to add weight, but that it needed to be the right kind of weight. As such, each participant noted the use of protein supplements with this in mind.

A third sub-theme centered on body image dissatisfaction being rooted in the desire to attain "the perfect body". These desires were expressed in two distinct ways: (a) A desire to look like professional bodybuilders and (b) a desire to look like works of art. Many of the participants also described their physique in terms of a work of art. John had representative comments which each of these areas. First he said, "I would like to have a bigger, stronger, better looking body… like the top pro bodybuilders… the ones on the cover of the magazines".[32] He went on to add, "I see what the guys I idolize look like. They look like massive Greek statues".[32]

A fourth sub-theme was that body image perception is derived from how they perceive themselves, as well as how others perceive them. Two particular indicators emerged here: (a) skepticism related to their relative size and (b) a consciousness that others in their lives do not, in fact, perceive them as "small". Brandon summed up many participants' skepticism by saying, "It is hard to feel big when you see your idols walking on stage weighing 285 pounds of ripped muscle with no body fat".[32] This feeling of inadequacy was often coupled with being told by others how big they were. Chris said, "Now, a lot of people say, 'You are huge', but I really do not feel very big. I still look in the mirror and see the same person I used to be most of the time".[32] Justin recalled, "People have told me I am one of the biggest and strongest guys they have ever seen… I do not see it".[32] Many of the participants relayed similar sentiments which pitted their own view of themselves in contrast to the views of other people.

A fifth sub-theme related to a realization that the ideal body image they sought was largely unattainable, and that they are unlikely to every, truly, be satisfied. To this point, James said, "I think bodybuilding is an addiction. It is a way of life. The idea of that certain look, the sacrifices, and the supplements needed to achieve it are always on my mind…. It is about constant improvement".[32] George discussed "doubling

up" workouts in order to feed this addiction, and many participants reported that the addiction was not just limited to their time in the gym. George said, "Lifting is all that I think about… regardless of what I am doing".[32]

The sixth sub-theme focused on the time and energy invested in the sport, largely to the point of obsession. Three distinct phenomena were observed related to investment: (a) longevity of involvement (b) weekly time investment, and (c) time investment per session. To the longevity of involvement, each participant had been involved in bodybuilding for at least two years, with some as long as fifteen years. Indicative of the weekly investment many described, Riley said, "I train every day. There are no days off".[32] Describing "no days off" was common, and even those who took "rest days" were still actively lifting at least five times per week. Responses about investment per session could range anywhere from 1-3 hours depending on the daily goal. Frank reflected that he dedicated at least two and half hours each day, and Will talked about lifting up to five hours in a single day. These were not uncommon responses.

A seventh sub-them was the emphasis that bodybuilders place on nutrition in order to reach their ideal. Two specific criteria were present in this sub-theme: (a) consuming large amounts of supplements and food and (b) adhering to strict dietary restrictions on supplement and food consumption. "Bulk" eating, which is characterized by eating large quantities of whatever you can, was a common among participants. Phil relayed, "When I bulk I eat in massive quantities… I eat as much as I can eat… I also supplement with whey proteins or mass gainers to hit adequate levels in my diet".[32] Not every participant used the term "bulk" eating, but nearly all described eating in large quantities with the goal of increasing/maintaining mass. Additionally, participants illustrated strict consumption restrictions. Bret said, "I only eat chicken and lean steak for protein… I try to stick to brown rice and other complex carbohydrates and avoid refined sugars… I will sometimes have cheat days, but I do not feel I need those".[32] Chris described being, "Very strict in my nutrition… I make sure to eat every two and a half to three hours for every meal with the right amount of proteins, carbohydrates, and fats".[32] Most participants had very similar responses regarding their nutritional guidelines.

The final sub-theme was the prevalent use of legal and illegal supplements in their training. James may have best summed up the collective responses on legal supplements by saying, "When you are weak and small for so long you will use anything you can get if it allows you to get bigger and more muscular… I used and still use vitamins, test boosters, creatine, protein, and amino acids".[32] He, and others, described the use of these supplements and frequent and ongoing. In bodybuilder terminology, "gear" refers to illegal supplements like anabolic steroids. The use of gear among participants was often dressed as helping them "be the best they can", or in terms of speeding up the development of muscle. Some participants made distinctions between appropriate and inappropriate gear. Dan indicated the use of gear as "on and off" throughout his years of bodybuilding, which was representative of many responses on the subject. Many participants described using a "cycle" of illegal supplements, where they are used for a set amount of time, typically between four and twelve weeks. Types of illegal substances varied among participants, but usage in general was common.

Three sub-themes emerged under the second theme of improving strength and performance, and are presented in Table 2.

Table 2

*Sub-themes for increasing strength and enhancing performance*

| | |
|---|---|
| 1 | Bodybuilders perceive that supplment usage is required |
| 2 | Performance is reflected through intensity and a need for recovery |
| 3 | Bodybuilders use various legal and illegal supplments to enhance performance |

The first sub-theme is that amateur bodybuilders believe supplement use is necessary. As Robert said, "Diet is number one, but supplements improve performance… there is no doubt in my mind".[32] Phil commented, "I know that as a bodybuilder I cannot have the performance I need in the gym to get the physique I want without the use of supplements in conjunction with my diet".[32] Each of these comments highlights the strongly-held belief that supplements are crucial, even to the point that the failure to use them could result in dramatic losses in performance.

A second sub-theme was that supplements serve the purpose of providing the needed intensity exerted during training, as well as aid in recovery afterwards. To many, this included training which would push their bodies to exhaustion, and even sickness. Many participants noted that they measured intensity by pushing their bodies to the extreme. Pushing their bodies to the extreme was described in such terms as reaching "total failure". Kyle's description is characteristic of many of the comments on the subject of intensity:

> I feel the only way to know that I have pushed myself to the limits required is to reach that point of total failure… to be so exhausted that I cannot think straight… I think it says something about a person that knows how hard they can push and still continue to go to the point of throwing up or continue after throwing up.[32]

Many participants spoke of this expectation of intensity with immense pride. They used it as a barometer for how they train in comparison to others. Sean reported, "I live in a world of pain and discipline through my intensity… others live in a world of laziness and complacency".[32] Interestingly, the majority of participants acknowledged that they have often over-trained. Related, they all noted the use of a protein supplement for recovery purposes.

The final sub-theme focused legal and illegal supplement usage. Many supplements are multi-purpose in that they may aid in strength, performance, and/or recovery. Legal supplement use was largely described as consistent and ongoing with the purpose of improving performance. James shared what was indicative of many responses on the subject, "If you are not going to at the very least use protein and increase it as you gain size, you will never reach your potential or the results you desire".[32] The use of gear was similar to that of legal supplements in terms of usage, duration, and frequency. Many described the use of gear in terms of doing all they could to increase performance. According to Riley, "When I enter the gym I want to kill the weights and my workout in the gym so I use gear to push my body to the limit".[32] Dan added that, "To become a machine I use anything and everything possible, which includes gear".[32] This was a common attitude expressed by participants who used illegal supplements.

Three sub-themes emerged from the final primary theme of a belief that the positive benefits outweighed the negative consequences. These sub-themes are presented in Table 3.

Table 3

*Sub-themes for believing positive benefits outweigh negative consequences*

| | |
|---|---|
| 1 | Bodybuilders do not trust supplement companies, but still use based on research |
| 2 | Bodybuilders acknowledge a lack of understanding of their lifestyle from those in their social lives |
| 3 | Bodybuilders recognize dangers of adverse side effects from supplementation |

The first sub-theme centers on a lack of trust that bodybuilders have for supplement companies and endorsers, which leads many to make their own decisions. Many relayed that they have been ripped off in the past, and believe many of the products are overpriced and of poor quality. George commented, "The supplement companies are always trying to rip you off price-wise with endorsements… I do not care who endorses the product".[32] Frank echoes why many talked about making their own decisions, "I go with things I have purchased in the past because I know they work… I might look at an endorsement, but I am not going to purchase it on that basis... too much unknown".[32] Nearly each participant commented about a lack of regulation leading to a flooded market of poor quality products. Beyond their own experiences, most mentioned seeking the help of their peers. Steve said, "I only trust friends that know what they are talking about in choosing supplements. I never trust athletes or magazines".[32]

A second sub-theme focused on people in participant's social lives not understanding their supplement choices. These experiences ranged from their friends and social events, all the way to intimate relationships. A common sentiment related to skipping social events in fear it would negatively affect their lifting. Many discussed sacrifices they believed they had to make in terms of friends and relationships. Dan said, "Some of my friends do not understand. They are lazy… Some of the others just acknowledge my progress and commitment".[32] Robert stated, "I've had girlfriends that didn't understand the commitment it takes to do bodybuilding and the priority it has in my life… those types of relationships never lasted long".[32] Participants relayed similar stories from friends and family related to cheating, steroid use, and the desire to engage in bodybuilding.

The third sub-theme emphasizes the participants' recognition of the dangers associated with supplement use. In general, they recognize the risks, but believe the majority of that risk resides with banned substances. James' insight was quite telling:

> I think safety concerns and risk with the use of supplements is an important factor in this lifestyle... There has been a good bit of talk surrounding some products like ephedrine and DMAA lately that has caused the deaths of athletes and soldiers… But I do think there are many benefits to using the right supplements.[32]

Even among those that acknowledged the dangers of illegal supplements, the general consensus was not that they would stop using, but rather, that they would consider it if they really saw threats to their health. Some went as far to say they would not stop usage, even if it was recommended by a doctor. A recognition of the dangers, for many, was not going to lead to a change in supplement usage behavior.

**Discussion**

The most compelling conclusion is that bodybuilders are influenced to take supplements for three primary reasons: (1) to attain an ideal body; (2) to increase strength and performance; and (3) a belief that positive benefits outweigh the potential negative consequences. Specific to the third theme, these findings are supported in previous research which found a key determinant which draws men to bodybuilding is the desire to achieve the perfect image and to be recognized for it.[33] Results of the present study also correlate with previous findings on bodybuilder's perception of training intensity, as they feel the need to push their bodies to the limits of exhaustion in order to reach the level of success they seek.[8] In conjunction with training intensity, they stress the need of supplementation, often increasing both frequency and quantity to meet the increasing demands on their bodies. All of this is accepted by amateur bodybuilders because of the meaning it provides in their lives and bodybuilding's ability to help them perceive themselves differently from others. They routinely strive to reach a level of satisfaction, all while the inherent body image issues in the sport lead them to constant dissatisfaction, which is amplified by the image paraded by bodybuilding culture. This unique combination pushes amateur bodybuilders to supplementation, despite a common acknowledgement that their perceptions, knowledge, and attitudes about supplements are flawed.

Perhaps the most concerning issue is that the majority of participants share dissatisfaction with their bodies, and as such, use supplements in an attempt to reach their ideal physique. While concerning, this issue is not surprising given the current research on bodybuilding. Participants in the present study describe skepticism within the amateur bodybuilding community, whether it is with the companies which are manufacturing supplements, or the perceptions that others had about the participants related to their physique. These findings, specifically, draw a parallel to previous research which noted the complex relationship that amateur bodybuilders have in their attempts to imitate professional bodybuilders, despite the unrealistic images portrayed by bodybuilding media and culture.[34] This relationship is also significant because unlike most other sports or competitions, the performance aspect of bodybuilding is linked directly to body image.[35] The preoccupation with body size, especially among bodybuilders, is now recognized as muscle dysmorphia (MD), which is a subtype of Body Dysmorphic Disorder in the DSM-5.[36-37] Specific to male bodybuilding populations, recent research has found positive relationships between MD and eating disorders[38-39], positive relationships between MD and depression, neuroticism, and perfecitonism[39], positive relationships between MD and anabolic steroid use[40], and an inverse relationship between MD and self-esteem.[41] This is especially concerning when research has linked higher MD prevalence in bodybuilders as compared to other athlete groups[42], and general MD research has been linked to consequences such as suicidal thoughts and attempts[43] and social isolation.[44-45] In all, such results indicate a continued need not only for ongoing research in the area, but ideally for intervention recommendations.

**Media-Friendly Summary**

Amateur bodybuilders use supplements at a high frequency, even when compared to other athletes. Researchers investigated the attitudes, knowledge, and perceptions of amateur bodybuilders regarding their decisions to use supplements. Results indicated primary reasons for supplementation were: (1) to achieve their ideal body, (2) to increase strength and performance, and (3) due to their belief that the positive benefits of supplementation outweigh the negative consequences. Participants acknowledged lack of knowledge in several instances, but their overall attitude towards supplements is strongly rooted in a perception that supplementation was necessary to achieve their goals. The findings correlate to existing

research on bodybuilder culture, but the relative lack of knowledge of an amateur may be particularly alarming when one considers the relationship between bodybuilding and body image issues – primarily those of muscle dysmorphia and its associated consequences.

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