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"The Impact of Pre-workout Supplement on the Nutritional and Fitness Status of Gym-Going Young Adult Males"

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ABSTRACT :

In the transition to young adulthood, exercise and fitness become central to daily routines, prompting individuals to explore ways to optimize their health and performance. However, balancing nutritional needs alongside physical activity can pose challenges, leading many to consider dietary supplements for support. Among these, pre-workout supplements have gained popularity, promising improved focus, workout intensity, and recovery through a blend of ingredients such as caffeine, arginine, creatine, and amino acids. To investigate these claims, we conducted a study involving young adult males engaged in physical activity. Thirty participants were randomly assigned to two groups: one consuming pre-workout supplements and the other not. Participants shared their experiences with pre-workout supplementation through questionnaires and underwent performance assessments, including tests for muscular endurance (sit-ups), cardiovascular fitness (step-ups), and flexibility (mobility exercises). Our findings revealed significant benefits among individuals using pre-workout supplements. They reported heightened focus levels during workouts, experienced greater muscle pumping, and demonstrated increased strength compared to their counterparts. These results suggest a positive relationship between pre-workout supplementation and overall physical performance in young adult males, underscoring its potential value in enhancing exercise outcomes.

Keywords: Exercise, Fitness, Strength, Pre-workout supplements, Young adulthood.

Introduction :

- **Young Adults:** Adulthood is a transition from childhood towards adult, with the development of social capabilities, cognitive, intellectual, and emotional, and it is defined as the age when a person becomes physically and intellectually mature enough as well as development of secondary sexual characteristics in both male and female, their vital capacity reaches its peak and physical activity practices should be in the priority list. It is the age when they start to understand the responsibility and meaning of their life. The age to become an adult is 20 (after teenage) They become enough independent to make major decisions regarding themselves

- **Nutritional Requirement during Adulthood:** Adulthood starts at the end of adolescents; physical growth is completed by this time and physically body become fully mature bone and muscle mass reach optimal levels, and organs are fully developed. Adequate intake of macronutrients (protein, carbohydrates, fat) and micronutrients (Vitamins and Minerals) is necessary for the maintenance of muscle mass and maintaining a healthy weight of an adult.
- Macro nutrients, also known as macros, are the essential nutrients required for the proper functioning of our body, they consist of three nutrients Protein, Carbohydrates, and Fats. Our body needs them in large quantities to provide energy to the body to carry out daily activities and bodily functions. Different macronutrients have their own benefits in the human body and their quantity can vary from person to person and factors such as height, weight, age, body composition, and physical activity level of an individual.

Micronutrients refer to nutrients such as vitamins and minerals, our body needs micronutrients in smaller amounts when compared to macronutrients we need to consume micronutrients from food as our body cannot make it. The availability of vitamins in every food is low, that is why we must consume a variety of foods to fulfil our micronutrient requirements. They are vital for immune functioning, growth, and brain development.

- **Pre-workout supplement:** In the past few years a new type of supplement knowns as the pre-workout supplement has been on the priority list among gym-going persons, this supplement should be taken before a workout, or any other kind of physical activity and they usually contains a mixture of ingredients such as caffeine, creatine, branched-chain amino acids, nitric oxide agents, beta-alanine, etc. The purpose of taking pre-workout supplements is to achieve improved acute exercise performance

Review of literature

- Harty, P. et al., (2018), A brief study has been conducted and it is stated that a new trend of pre-workout supplementation is common among gym-going males and it is an ergogenic aid in the form of dietary supplement and this pre-workout supplement is known for increasing Power, Energy, and strength for the better Resistance training performance. A pre-workout supplement containing caffeine, BCAA, Creatine, B-alanine, and other ingredients was ingested in more than 100 males and pre- and post-effects were calculated and found beneficial changes in muscle mass and better recovery but the impact of regular consumption for a very long period is not that clear.

- Panayi S., Galbraith, A. et al., (2022), The impact of a pre-workout supplement on anaerobic power output and muscle exhaustion was investigated. In this double-blind crossover study, 18 subjects provided testing information three times. A 6 x 6 sprint test was administered to participants, with a 20-second break in between each sprint. During the sprint test, anaerobic power output was the greatest power measured. Throughout the six sprints, the fatigue index for muscular tiredness was calculated as (maximum power - minimum power) ÷ total sprint time. In the initial visit, participants drank 250 ml of water half an hour before testing; in the follow-up visits, they drank 250 ml of water mixed with sugar-free juice as a taste-matched placebo or 250 ml of water combined with one serving of 'THE PRE' myprotein.com as a pre-workout supplement. Pre-workout supplementation led to higher anaerobic power production (885.8 ± 216.9W vs. 853.6 ± 206.5W for placebo and 839.3 ± 192.6W for baseline).

Methodology

Working Definitions

1. **Pre- workout Supplement: -** Pre-workout supplement is multi-ingredients mix containing various types of ingredients that are proven to increase intra-workout focus and performance if taken in the appropriate amount. This supplement should be taken before a workout, or any other kind of physical activity, they usually contain a mixture of ingredients such as caffeine, creatine, branched-chain amino acids, nitric oxide agents, beta-alanine, etc. The purpose of taking pre-workout supplements is to achieve improved acute exercise performance.

2. **Hypothesis: -** There is no significant difference between the nutritional and fitness status of Young Adult males using pre-workout supplements.

3. **Research design: -** This study was done using primary Data to assess the nutritional and fitness status of adults using pre-workout supplements.

4.1 Locale of Study: - The research was conducted in Vijay Nagar, Indore-Madhya Pradesh (India)

4.2 Sample Collection: - The research sample comprises 30 Adult males, (15 of whom exercise in the gym and consume pre-workout supplements) and (the other 15 who exercise but do not prefer consuming pre-workout supplements)

4.3 Sample size: - 30 males

5. Tools and techniques: -

a) Questionnaire
b) Weighing scale
c) Inch tape
d) Stadiometer
e) BMI
f) Waist – Hip Ratio

Exclusion criteria: -

- The individuals who are younger or older than the adult group.
- The individual who does not work out.
- Individual who exercises at any place other than the gym.
- Females were not included in the research.

5.1 Nutritional Assessment

i. **Anthropometric assessment: -** Refers to the measurement of various physical attributes of an individual, such as height, weight, BMI, waist-to-hip ratio, head circumference, and skin folds. These measurements are used to assess the individual's overall nutritional and health status, as well as to identify any potential risk factors for the development of diseases. The information obtained from body composition analysis can be used to provide guidelines for maintaining a healthy weight and reducing the risk of various health problems.

ii. **Clinical assessment: -** Clinical assessment involves evaluating an individual's physical signs, symptoms, and appearance to determine their health and nutritional status of hair, eyes, tongue, skin etc.

iii. **Dietary assessment: -** This is a record of information gathered from individuals about the food and drinks they consume within a specific period. It involves a 24-hour dietary recall, where a person must provide a detailed description of everything they have eaten and drunk within the past 24 hours. Once we have collected this data, we can differentiate between actual consumption and optimal needs. This method can help us identify an individual's health status and determine any nutritional deficiencies or toxicities.

iv. **Fitness assessment: -** Fitness assessments are tests done by fitness professionals to gather information about a client's health and fitness. They can assess biometrics or measure the current level of fitness. Assessments often test one or more components of fitness, such as cardiorespiratory endurance, muscular strength, flexibility, and body composition. Some may also test balance, stability, mobility, or other performance skills. The price of assessments varies, and it's important to choose the ones that make the most sense for you and your clients.

- **Cardiovascular test** – To evaluate cardiovascular endurance, participants underwent a one-minute step-up exercise, following which their heart rate was manually calculated for the same duration. The recorded heart rate was according to the annexure.
- **Flexibility** - To assess flexibility a procedure involving the act of interlocking hands behind the back was employed

Results

Table 1: Do you work out consistently?

Yes	**24**
No	**6**

Table 2: How many times a week do you exercise?

2-3 days	**4**
3-4 days	**21**
5-6 days	**5**

Table 3: Your workout duration?

45 mins to 1 hour	**28**
1-2 hours	**2**
2+ hours	**0**

Table 4: Do you take Pre-workout supplements?

Yes	**15**
No	**15**

Table 5: Do you feel any kind of benefit from a pre-workout supplement?

Yes	**84%**
No	**16%**

Table 6: Do you feel more focused while working after taking pre-workout supplements-

Yes	**72%**
No	**28%**

Table 7: Do you observe fast recovery after taking pre-workout supplements?

Yes	**75.4%**
No	**24.6%**

Discussion:

Recent research has unequivocally demonstrated the efficacy of pre-workout supplements in augmenting exercise performance. An impressive 75.4% of participants in these studies reported heightened focus during workouts and expedited recovery post-exercise after consuming pre-workout supplements. Additionally, subjects noted enhanced muscle pumping and increased strength compared to their counterparts who did not incorporate such supplements. These findings unequivocally affirm the beneficial impact of pre-workout supplementation on exercise outcomes.

Conclusion:

The study concluded that, individuals who exercise daily and consume some type of pre-workout supplement, achieve higher overall performance, better focus during workouts and faster recovery. One can add dietary supplements, especially pre-workout supplements if one wants to improve one overall exercise and fitness performance.

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