

ASSESSMENT OF THE NUTRITION STATUS AND FOOD SUPPLEMENTS OF ATHLETES

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Received: 10th July, 2025

Revised & Accepted: 15th November, 2025

Published: 25th December, 2025

DOI: <https://doie.org/10.65985/AS.2026103135>

Abstract

Background: Sports nutrition is the study and application of nutrition to support all areas of athletic performance. They include providing education on the proper foods, nutrients, hydration protocols, and supplements to help succeed in sports.

Aims and Objective: The study aimed to find the nutrition status and food supplements of the athletes in Manipur.

Method: The researchers were selected randomly from 50 males and 50 females of Sports Academy in Manipur inmates who were trained athletes. The subjects in the aged range were 15 to 25 years old. The researcher controlled no religious, caste, creed factors, or environmental conditions. The test items are muscular strength (push-ups) and endurance (bent knee sit-ups) for pre-test and post-test variables obtained by administering a six-month training schedule. During the training period, the amount of nutrition and food supplements is maintained for both males and females.

Results: The nutrition status and supplement intake evaluation showed a positive effect. A sound nutritional status at a growing age should be necessary for better health, immunity, and excellent sports potential. Nutrition requirements for athletes at daily carbohydrate, protein, fat, and vitamins (calcium) improved their nutritional status and enhanced the sport's potential. Food supplementation and nutrition intake helped to understand the improvement of performance and the importance of nutrition in sports among these athletes' males and females. Specifically, The nutritional status of any individual is directly affected by their nutrition intake. The components of diets should be chosen to provide all nutrients in adequate amounts and proportionately.

Conclusion: The study was insignificant because it can help improve an athlete's performance, increase knowledge, and develop user-friendly food supplements for sports personnel. Sports nutrition and food supplements are essential to every age group of athletes.

Keywords: Protein, Fat, Carbohydrate, Vitamins

INTRODUCTION

Sports nutrition is the study and application of nutrition to support all areas of athletic performance. They include providing education on the proper foods, nutrients, hydration protocols, and

supplements to help succeed in sports. An essential factor distinguishing sports nutrition from general nutrition is that athletes may need different nutrients than non-athletes. When combined with other areas of athletic development, such as training, sports nutrition can significantly improve an athlete's performance. Regarding sports nutrition, recommendations are highly individualized based on several factors, including sport, position, training experience, and on/off- season status. However, a good amount of sports nutrition advice applies to most athletes, regardless of their sport. The supplementary for sports nutrition whole foods should comprise the bulk of an athlete's diet. They help provide an appropriate balance of energy, nutrients, and other bioactive compounds in food found in supplement form. That said, since athletes usually have more significant nutritional needs than the general population, supplementation can fill in any gaps in the diet. Here are the top science-backed supplements often recommended by sports nutritionists. One of the roles of sports nutritionists is to help debunk these myths and provide athletes with accurate information. Here are three top sports nutrition myths and the facts.

Supplementing with protein will cause you to get bulky: While protein intake is essential in gaining muscle, simply supplementing with protein will not cause any significant muscle gains. Resistance training must be performed regularly for an extended period to promote notable changes in muscle size while ensuring the diet is on point. Even then, depending on several factors, including genetics, sex, and body size, you will likely not look bulky.

Eating before bed will cause excess fat gain: Another common myth in sports nutrition is that eating close to bedtime will cause additional fat gain. The assumption is that because it is lying down, the body burns fewer calories than any food. While it's true that the body burns fewer calories at rest, this doesn't mean the food will automatically be as fat. Many metabolic processes take place during sleep. Focusing on the types of food eaten close to bedtime is best to minimize fat gain.

Drinking coffee before a workout can promote dehydration: Coffee gets a bad rap for dehydrating. But the available research suggests that's not the case. Athletes have a good reason to be concerned about their hydration status, as sweat loss can affect the body's fluid balance. But as long as they start well hydrated, drinking coffee before exercise isn't likely to promote dehydration. *Daniel Preiato, 2023.*

Sports nutrition has many goals, one of which is to enhance performance. First, it improves performance by improving body composition, which increases speed, quickness, mobility, and strength. Second, it will help the speed of recovery, which will, in turn, create more capacity for practicing and competition as the body becomes more fit and adjusts to the coupling of good nutrition incorporated into the workout regimen. Third, it will increase energy for both practice and competition, which will help one's performance (Smolin and Grosvenor, 2000). A strategic diet will also improve immunity, allowing one to stay healthy and continue and intensify practice and training (Mahan and Stump, 2000). Thus, nutritional status is a valuable determinant of athletic performance (Nogueira and Costa, 2004).

The importance of diet and the benefits of taking, when necessary, food supplements for health and the prevention of numerous syndromes have documented in multiple scientific studies; numerous scientific data demonstrate the existence of a correlation between the intake of specific nutrients or food supplements and the prevention of chronic syndromes such as cancer, osteoporosis, and heart disease; numerous clinical research has demonstrated how numerous chronic diseases can be prevented simply by a healthy diet, for example, a diet with a low content of saturated fats and cholesterol, a limited amount of sodium, and, on the contrary, with a high percentage of foods of plant origin. Sports nutrition leads to optimal athletic performance and lifetime health benefits (AMA, 1991). Energy and macronutrient needs, especially carbohydrates and protein, must be met during high

physical activity to maintain body weight, replenish glycogen stores, and provide adequate protein to build and repair tissue (Brown, 2002). Fat intake should be sufficient to provide the essential fatty acids and fat-soluble vitamins and contribute energy for weight maintenance (Houtkooper, 2000). Maintaining proper nutrition and meeting the needs of the players concerning energy, protein, fat, minerals, and vitamins are crucial, and these nutrient needs are higher for athletes than for ordinary persons (Coleman, 1989). Nutrition studies foods and nutrients and their effect on the individual's health, growth, and development. Sports Nutrition applies nutrition principles to sports with the intent of maximizing performance. Success in sports depends on genetic endowments, the state of training, and nutrition. Specialized exercise training significantly improves athletic performance, and proper nutrition is essential to the total training program. Athletes and fitness enthusiasts need the same vital nutrients as non-active people, with varied caloric needs and some increase in macro and micronutrients. Therefore, it is necessary to explore and assess these increased nutritional requirements of athletes before, during, and after competition for optimal sports performance (ILSI, 2005). Nutrition is an integral component of any athlete's training and performance program.

The balance between energy intake and demands is crucial for adult training, recovery, and performance. The demands for training and performance remain in young athletes, but they should be a secondary focus after the demands associated with maintaining proper growth and maturation. Research interventions imposing significant physiological loads and diet manipulation are limited in youth due to the ethical considerations related to potential negative impacts on the growth and maturation processes associated with younger individuals. This necessary limitation results in practitioners providing nutritional guidance to young athletes relying on exercise nutrition recommendations intended for adults. (John Eric *et al.*, 2015). Nutrition periodization ensures the athlete receives the nutrients required to enhance health, improve strength, and sustain power and endurance at the right time. At the same time, this strategy helps the athlete maintain a healthy immune system and ensures appropriate body weight and composition. Nutrition periodization supports changes in training load so that the athletes can achieve high-quality workouts and recover rapidly. Properly planned nutrition supports physical training, enables athletes to practice and recover well, and moves ahead to achieve the goal of improved performance—nutrition periodization is a year-long endeavor to support the athlete's changes in energy consumption. The science of nutrition and performance is growing at an incredible pace. As this body of research expands and scientists carefully scrutinize the factors that can affect an athlete's performance and physique, the need and demand for sports nutrition practitioners also grows (Bob Seebohar, 2012).

This study was a statement of literature, personal understanding, knowledge, and work experience. The researcher was interested in assessing the nutrition status and food supplements of the athletes in Manipur.

Aims and Objective

The aim and objective of the study were to find the nutrition status and food supplements of the athletes in Manipur.

Methods:

The researchers were selected randomly from 50 males and 50 females of Sports Academy of Manipur inmates who were trained athletes. The subjects are in the age range of 15 to 25 years. The researcher controlled no religious, caste, creed factors, or environmental conditions. The test items are muscular strength (push-ups) and endurance (bent knee sit-ups) of pre-test and post-test variables

obtained by administering a six-month training schedule. During the training period, the amount of nutrition and food supplements for both males and females.

Results

Table 1. Average Nutrition Requirements for Athletes at daily.

SL.No	Items	Strength	Endurance
1	Carbohydrate	3.9-8.0g kg ⁻¹ day ⁻¹	6-10g kg ⁻¹ day ⁻¹
2	Protein	1.2- 1.7g kg ⁻¹ day ⁻¹	1.2-1.4g kg ⁻¹ day ⁻¹
3	Fat	20-30 % of Total Energy Intake (10% Saturated,10% Polyunsaturated,10% Monounsaturated)	20-30 % of Total Energy Intake (10% Saturated,10% Polyunsaturated,10% Monounsaturated)
4	Vitamin C	75mg 1 day	75mg 1 day

Table 2. Mean, SD, and t-value of the muscular strength (Push-Up) Males of the Pre-Test and Post-Test of the athletes' nutrition status and food supplements.

Variable	Test	No.of subject	Means	Std.Deviation	t-test
Push-Up	Pre-Test	50	56.02	13.06	1.67
	Post-Test	50	59.42	13.27	
	Total	100	57.75	13.27	

*Significant at 0.05, where tabulated $t(0.05)(98) = 3.39$.

Table 2 reveals that the mean (M) and standard (SD) deviation of the pre-test and post-test of a push-up were 56.02 ± 13.06 and 59.42 ± 13.27 , respectively, and found the calculated $t = 1.67$. Therefore, there was an insignificant improvement in muscular strength (push-ups) in athletes as the calculated value of $t = 1.67$ is lesser than the tabulated $t = 3.39$ at a 0.05 confidence level. The graphical representation of the mean and standard deviation of push-ups is shown in Figure 2.

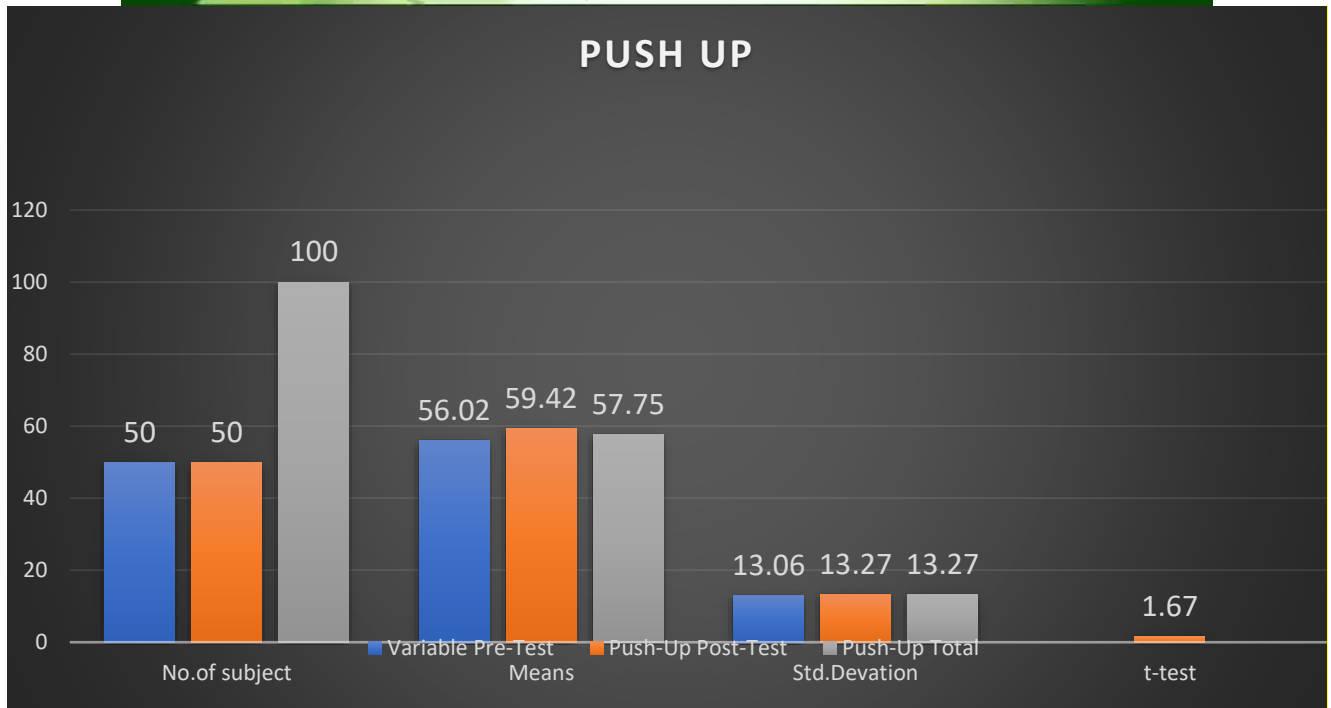


Table 3. Mean, SD, and t-value of the muscular Endurance (Bent Knee Sit-Up) Males of the Pre-Test and Post-Test of the athletes' nutrition status and food supplements.

Variable	Test	No.of subject	Means	Std.Devation	t-test
Bent Knee Sit- Up	Pre-Test	50	57.72	12.04	2.61
	Post-Test	50	62.94	12.66	
	Total	100	60.33	12.56	

*Significant at 0.05, where tabulated $t(0.05)(98) = 3.39$.

Table 3 reveals that the mean (M) and standard (SD) deviation of the pre-test and post-test of a push-up were 57.72 ± 12.04 and 62.94 ± 12.66 , respectively, and found the calculated $t = 2.61$. Therefore, there was an insignificant improvement in muscular endurance (bent knee sit-up) in athletes as the computed value of $t = 2.61$ is lesser than the tabulated $t = 3.39$ at a 0.05 confidence level. The graphical representation of the mean and standard deviation of push-ups is shown in Figure 3.

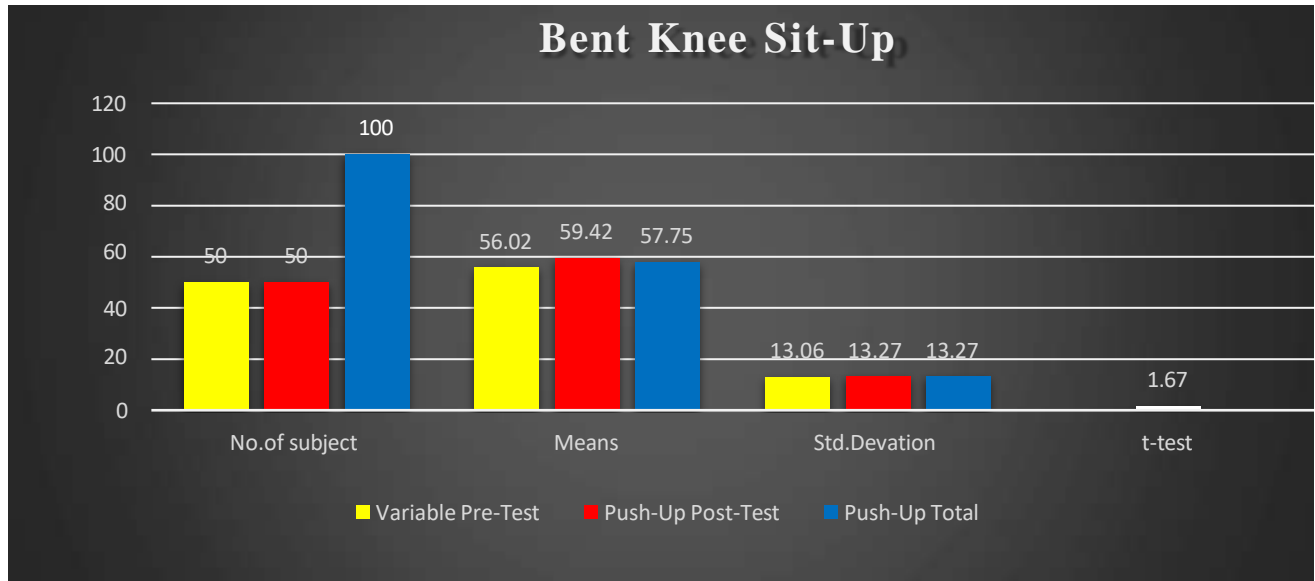
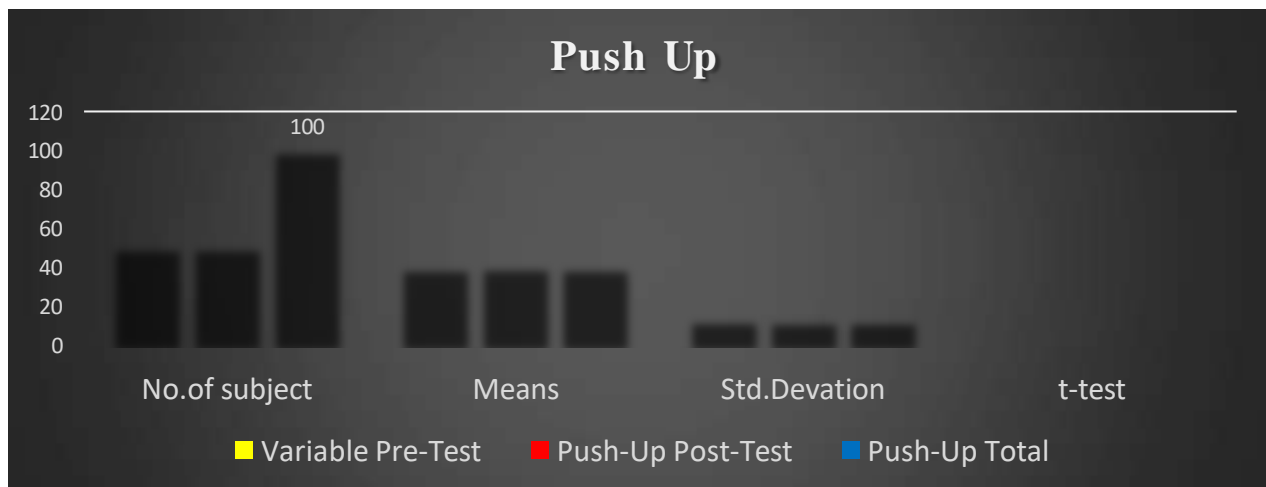


Table 4. Mean, SD, and t-value of the muscular strength (Push-Up) Females of the Pre-Test and Post-Test of the athletes' nutrition status and food supplements.

Variable	Test	No. of subject	Means	Std.Devation	t-test
Push-Up	Pre-Test	50	39.56	13.29	0.84
	Post-Test	50	39.95	13.52	
	Total	100	39.75	12.85	

*Significant at 0.05, where tabulated $t(0.05)(98) = 3.39$.

Table 4 reveals that the mean (M) and standard (SD) deviation of the pre-test and post-test of a push-up were 39.56 ± 13.29 and 39.95 ± 13.52 , respectively, and found the calculated $t = 0.84$. Therefore, there was an insignificant improvement in muscular strength (push-ups) in athletes as the computed values are $t = 0.84$ is less than the tabulated $t = 3.39$ at a 0.05 confidence level. The graphical representation of the mean and standard deviation of push-ups is shown in Figure 4.



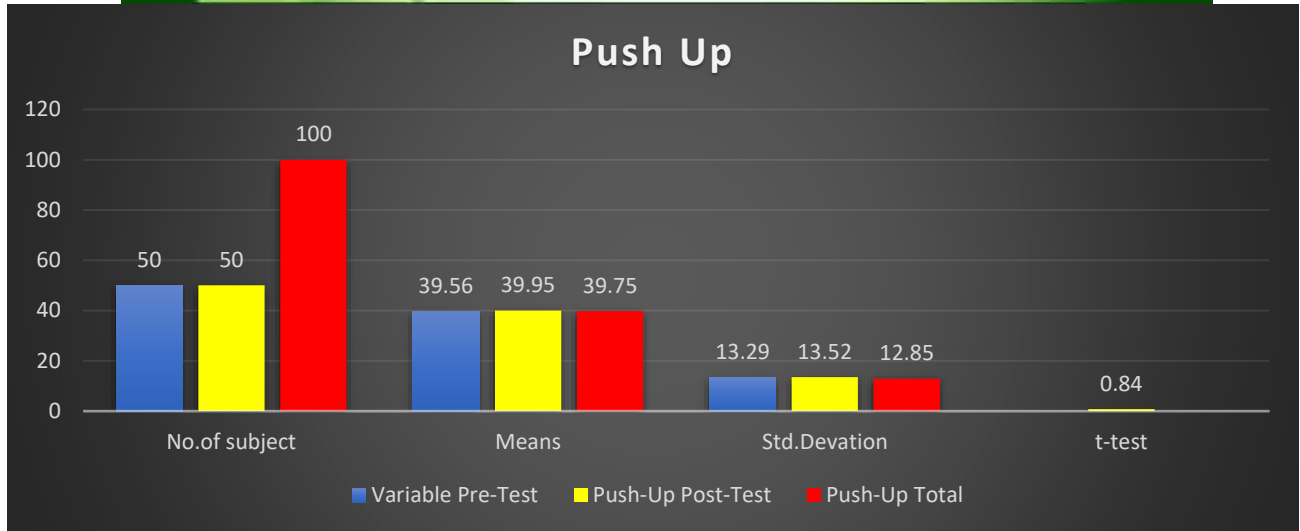
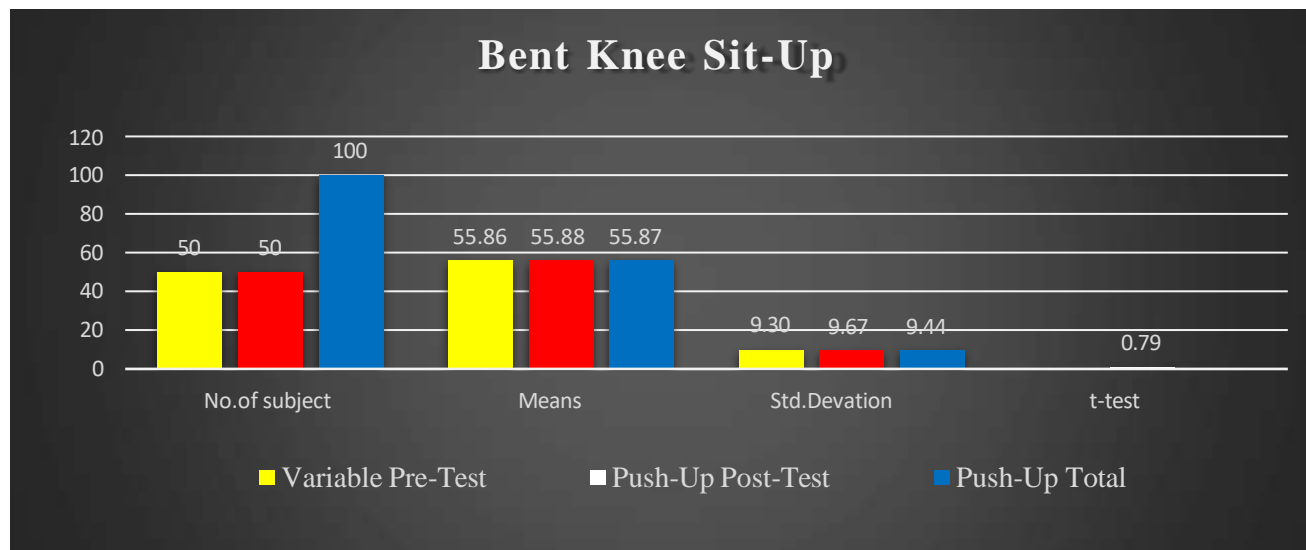


Table 5. Mean, SD, and t-value of the muscular Endurance (Bent Knee Sit-Up) Females of the Pre-Test and Post-Test of the athletes' nutrition status and food supplements.

Variable	Test	No. of subject	Means	Std. Deviation	t-test
Bent Knee Sit-Up	Pre-Test	50	55.86	9.30	0.79
	Post-Test	50	55.88	9.67	
	Total	100	55.87	9.44	

*Significant at 0.05, where tabulated $t(0.05)(98) = 3.39$.

Table 5 reveals that the mean (M) and standard (SD) deviation of the pre-test and post-test of a push-up were 55.86 ± 9.30 and 55.88 ± 9.67 , respectively, and found the calculated $t = 0.19$. Therefore, there was an insignificant improvement in muscular endurance (bent knee sit-up) in athletes as the computed value of $t = 0.79$ is lesser than the tabulated $t = 3.39$ at a 0.05 confidence level. The graphical representation of the mean and standard deviation of push-ups is shown in Figure 5.



Discussion

The training schedule and exercise intensity of athletes have energy intake recommendations for muscular strength and muscular endurance athletes, i.e., Push-ups and Bent Knee Sit-ups for males and females.

Table 2 shows that the muscular strength of push-ups of the pre-test mean and standard deviation value is 56.02 ± 13.06 . The post-test means and standard deviation values are 59.42 ± 13.27 no., respectively (athlete males). The average standard score for push-ups is >34 numbers. The result showed that pre-tests and post-tests are effectively improved by $3.4 \pm 0.21\%$ by giving supplementary nutrition during the training schedule. Table 3 shows that the muscular endurance of bent knee sit-ups of the pre-test of mean and standard deviation value is 57.72 ± 12.04 . The post-test mean and standard deviation values are 62.94 ± 12.66 no., respectively (athlete males). The average standard score for bent knee sit-ups is >38 numbers. The results showed that pre-tests and post-tests are effectively improved by $5.22 \pm 0.62\%$ by giving supplementary nutrition during the training schedule.

Table 4 shows that the muscular strength of push-ups of the pre-test of mean and standard deviation value is 39.56 ± 13.29 . The post-test mean and standard deviation values are 39.95 ± 13.52 no., respectively (athlete females). The average standard score for push-ups is >21 numbers. The results showed that pre-tests and post-tests are effectively improved by $0.39 \pm 0.23\%$ by giving supplementary nutrition during the training schedule. Table 5 shows that the muscular endurance of bent knee sit-ups of the pre-test mean and standard deviation values are 55.86 ± 9.30 . The post-test mean and standard deviation values are 55.88 ± 9.67 no., respectively (athlete females). The average standard score for bent knee sit-ups is >38 numbers. The results showed that pre-tests and post-tests are effectively improved by $0.02 \pm 0.37\%$ by giving supplementary nutrition during the training schedule.

Therefore, the nutrition status and supplement intake evaluation improved positively. A sound nutritional status at a growing age should be necessary for better health, immunity, and excellent sports potential. Nutrition requirements for athletes in their daily routine during training schedules include carbohydrates, protein, fat, and vitamins (calcium), which improve their nutritional status and enhance

the sport's potential. Food supplementation and nutrition intake helped to understand the importance of nutrition in sports among these athletes' males and females.

Conclusion

The study was insignificant in athlete performance, increased knowledge, and developed user-friendly food supplements for sports personnel. Sports nutrition and food supplements are essential to every age group of athletes. Sports nutrition begins with adequate energy intake to support caloric expenditure and promote maintaining or improving strength, endurance, muscle mass, and health. Athletes consuming a well-designed diet that includes sufficient amounts and proportions of the macronutrients carbohydrates, proteins, fat, and vitamins will promote peak performance.

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