



Research Article

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Enhancement of Sports Performance-Impact of Indian Gooseberry (*Phyllanthus Emblica* Linn) on Athletes-An Analytical Study

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ABSTRACT

The core objective of the study was to find out Indian Gooseberry (amla) and its impact on sports performance of any supplement in high-intensity short-duration exercise that was not preceded by a substantial preload or overnight fast. 200 subjects divided into Group A (n = 100) Indian Gooseberry Educational intervention and Group B (n=100) Indian Gooseberry and Nutrition knowledge understanding consisting of the players, parents, coaches, Physical Education Personnel. The survey tool was 80 nutrition questions ranged to elicit information from general nutrition to specific effects of nutrients. . The results indicated that the Indian Gooseberry intake for the intervention group A was significantly increased in the performance nutrition education period due to increased consumption of the Indian Gooseberry $P < 0.05$. It was concluded that the systematic implementation of a nutritional educational program for athletes can modify athletes' nutritional and dietary awareness.

Keywords: Indian Gooseberry, supplement, nutrition knowledge, high intensity short duration exercise

INTRODUCTION

It is a forgone conclusion that Nutrition occupies a very significant position in attainment of extraordinary level of accomplishments for elite athletes in sports¹². Nutritional prominence has an unswerving demeanour on the level of physical achievement¹. Therefore, physical fitness and training are considerably reliant on nutritional status of athletic strata³. Nutrition is an essential component of any physical fitness protocol². The foremost dietary aim for dynamic supplement data from nutritionists, dietitians and personages is to acquire passable nourishment to augment well-being and fitness or sports performance¹⁵. Everybody know athletes would like to train harder, get faster, get bigger and gain strength but many athletes indulge the wrong road to reach their targets usually because of a lack of knowledge⁸. This act leads to negative long term effects⁷. There is a ton of information which covers about sports nutrition, safe supplements and banned supplements^{17, 11}. Indian Gooseberry (Amla) is aboriginal in stifling Southeast Asia and is acknowledged as a copious source of vitamin C. The fruit is botanically named as *Phyllanthus Emblica* Linn and is normally taken as a healthy food in both fresh and numerous conserved forms such as pickles, dried fruits, and beverage yields¹⁶. Indian gooseberry is a substitute artefact to instantaneous beverage concentrate and sanitised fluid. It is normally consumed for thirst-quenching and good health. It has been employed as a medicine and food by individuals in numerous nations in Asia. In China, the beverage manufactured from fruit extract is ordinarily taken and wine prepared from juice fermentation is sold in arcades. In Indonesia, fresh fruit is supplemented to import bitterness to numerous dishes and is regularly utilized as a auxiliary for tamarind. In India,

fresh fruit is parched in tarts, supplemented to various foods as seasoning and the juice is employed to savour vinegar. Both ripe and half-ripe fruits are preserved in unbridged and also prepared into jam and numerous preservers, pickles and is relished. In Thailand, the fruit is regularly used as fresh and in countless conserved methods such as sanitized juice, beverage residue and desiccated fruit. It is also consumed as traditional medication for expectorant, antipyretic, diuretic, antidiarrheal and anti-scurvy. Keeping all the above factors the present study provides an opportunity to know the knowledge about food and nutritional evidence from players, parents, coaches and physical education personnel. Education awareness programmes were implemented in selected players, parents, coaches, physical education personnel with a emphasis on food classifications and their probable nutritional contributions in enhancing the performance. It also validates the practice and process for espousing a community based methodology in executing food based strategies as a viable approach to improve food and nutrition, notably for the players, parents, coaches and physical education personnel in the twin cities of Hyderabad and Secunderabad.

Materials and Methods

A total of 200 subjects participated in the study. They were divided into Indian Gooseberry Educational Intervention Group A (n = 100) and Indian Gooseberry and Nutrition knowledge understanding Group B (n=100) consisting of the players, parents, coaches, Physical Education Personnel. A multi-method grounded approach was adopted, where results from each phase of the research facilitated the focus of preceding stages. A culture-sensitive research contrivance was developed for exploring Indian Gooseberry on sports performance. The survey instrument utilized in this research problem was established from amalgamation of earlier directed questionnaires. The items of the questionnaire were designed to quantify primary nutrition and sports nutrition knowledge (n=100, 25-Players, 25-Parents, 25-Coaches, 25-Physical Education Personnel); nutrition worth of classic food ranges, contemporary dietary application established on the food guide pyramid; probable basis of evidence; approaches toward nutrition; and the objective to apply appropriate nutrition to augment sports achievement. Four marks were calculated on basis of the outcomes of the Sports Nutrition Questionnaire:

- 1) Indian Gooseberry Impact Nutrition Knowledge Score (NKS),
- 2) Nutrition Choice Score (NCS),
- 3) Nutrition Practice Score (NPS), and
- 4) Attitude Toward a Sports-Enhancing Diet (ASED) score

Participants were questioned with a chain of 80 nutrition queries that fluctuated in subject from broad nutrition to precise properties of nutrients. Every query was coded as “true” or “improper,” with a true score attaining a value of “1” and an improper score being allocated a value of “0.” The scores for entire questions on the Sports Nutrition Questionnaire were added to generate the Nutrition Knowledge Score (NKS). A Likert Scale for the fifteen statements dealing with Indian Gooseberry nutritional knowledge and perceived awareness covered in the Dietary and Nutrition Perception Inventory was implemented in order to score the fifteen statements.

The educational intervention was conversed applying a Power Point presentation arranged for all the participants in the course of the pre-season gatherings, after the conclusion of the pre-season assessment. The address was 20 minutes in duration, and comprised of time at the conclusion for a query and response session. The identical educational interpolation was administered by the investigator to all participants. The details of the address were derivative from the Indian Gooseberry and Nutrition Perception Inventory communicated by the researcher and designed to improve sports performance.

All subjects signed an informal consent form for their voluntarily participation in this study. The participants assembled with their separate teams and were requested to finalize the pre-season survey with the principal investigator. Subsequently, when the athletes concluded the pre-season survey, the educational intervention was piloted by the investigator¹⁴.

At the accomplishment of each team's season, end of the season consultations was conducted. During these get-togethers the athletes accomplished the post-season survey with the principal investigator¹⁴. Data analysis for Group-A (Indian Gooseberry Educational intervention participants) and Group B (Indian Gooseberry and Nutrition knowledge understanding participants) was conducted for two days during the baseline period, one day for the nutrition education period and for two days during the combination period.

The Wilcoxon on signed rank assessment¹³ was employed to analyse pre-test and post-test education nutrition knowledge scores and intake of cumulative and individual food items (fruit and beverages). Statistical significance was set at $P < 0.05$, and data were evaluated using SPSS for Windows (version 20.0, 2012, SPSS). Data were articulated as Mean \pm standard deviation. Correlation coefficients were utilized to relate the association among participants' Nutrition Knowledge Scores (NKS) with their Attitude toward a Sports-Enhancing Diet (ASED), their Nutrition Choices Scores (NCS), and their Nutrition Practices Scores (NPS). The confidence levels for the items of the tests were fixed at 0.05.

Results and Discussion

Table 1: showing the nutritional knowledge scores of players at pre and post-tests

Knowledge Component	Group A (n=100)		p-value	Group B (n=100)		p-value
	Pre-test	Post-test		Pre-test	Post-test	
Overall Mean score	7.63 \pm 1.69	10.13 \pm .84	0.018	8.67 \pm 0.58	7.00 \pm 1.73	0.018
Macro Nutrient Score	3.25 \pm 1.39	5.25 \pm 0.71 ^a	0.041	4.33 \pm 0.58	3.33 \pm 1.16	0.317
Micro Nutrient score	0.00 \pm 0.00	0.88 \pm .35 ^a	0.008	0.33 \pm .58	0.00 \pm 0.00	0.317
Hydration score	3.88 \pm 0.35	4.00 \pm 0.00	0.317	4.00 \pm 0.00	3.67 \pm .58	0.317

^a score significantly higher compared to the pre-test

The results indicated that the subjects lacked basic knowledge regarding the role of Indian Gooseberry nutrients and efficacy of supplements, but had adequate information about strategies for detecting fluid replenishment and the negative effect on performance at baseline. Lack of basic nutritional knowledge may have profound implications on food choices, performance and overall health of athletes. Further, there was significant increase in the overall change in the nutritional knowledge scores of group A which indicated that the nutrition education delivered in a small group setting and reinforced at the training table meal with the mean and SD reading 7.63 \pm 1.69 from pre to 10.13 \pm .84 post-test and the p value being 0.018.

Table 4.2: Indian Gooseberry intake of players at baseline (B), Mean and P-Value after Indian Gooseberry Nutrition Education Intervention (IGNE) Group A and combination Indian Gooseberry and Nutrition knowledge understanding Group B

Food Component (Intervention Group A n=100)	Baseline	Nutrition Education	P Value (B-NE)	Combination	P Value (B-C)	P Value (NE-C)
Mean Total Food & Indian Gooseberry Group A	686.3± 213.1	1002.4± 353.6 ^a	0.038	1296.4 ± 413 Nutrients food with(Indian Gooseberry)	0.008	0.314 ^a
				750 ± 289.8 fruit, milk, supplements	0.110	0.314 ^a
				1155.9 ± 353.3 Regular Food without supplements	0.021	0.515
Food Component combination of Indian Gooseberry and Nutrition knowledge understanding Group B	Baseline (g)	Nutrition Education (g)	P Value (B-NE)	Combination (g)	P Value (B-C)	P Value (NE-C)
Mean Total Food & Indian Gooseberry and Nutrition knowledge understanding-B	1091.5 ± 642.3	1130.0± 721.7	0.593	1404.7 ± 631.2	0.109	0.109
				820.3 ± 354.0	0.285	0.285
				1331.7 ± 721.2)	0.109	0.109

Table 4.2 denotes the results with regard to the performance change after consumption of Indian Gooseberry Intake compared to baseline with mean and SD values showing 1296.4 ± 413 & 686.3 ± 213.1 respectively. Indian Gooseberry intake for the intervention group A significantly increased in the performance due to increased consumption of the Indian Gooseberry $P < 0.05$. This increase may be a result of the nutrition education received regarding the benefits of a post-workout sports performance. In the combination period, Indian Gooseberry intake significantly increased. In the Indian Gooseberry and Nutrition knowledge understanding-B, there were no statistically noteworthy differences in the nutrition intake when compared from pre to post with the values being 1404.7 ± 631.2 & 1404.7 ± 631.2 respectively $P > 0.05$. However, all the 25-Players, 25-Parents, 25-Coaches, 25-Physical Education Personnel participants nutrition knowledge understanding increased when it was offered indicating that it was well-accepted regardless of education on nutrition awareness.

Discussion

The primary purpose of this research was to observe if athletes' perceived nutritional awareness was different from their actual nutritional awareness and how the consumption of Indian Gooseberry affects the sports performance.

Sports performance has a direct and massive impact by the foods an athlete eats. Suitable nutrition is an essential part of athletes' preparation and performance strategy. Appropriate nutrition guarantees that a person is gathering the fuels required for the energy creation associated to activity and recovery. One of the expanses necessitating to be looked into is the exclusive nutritional requirements allied with extreme workout strain. However, the impact of vigorous physiological training and nutritional variants in amalgamation with training trauma in young sportsmen are significantly inadequate. This inadequate information is most probably owing to the moral contemplations of suppressing nutrients and physiologically overloading to a helpless populace such as youngsters and adolescents still in the course of progress and development ¹⁸.

To our understanding, this investigation is the first of its kind to examine the Indian Gooseberry (amla) and its impact on sports performance of any supplement in high-intensity --short-duration exercise that was not preceded by an extensive preload or overnight fast. In spite of a reasonably minor sample size, the effects of the supplement on performance were significantly effective. The researcher efficaciously utilized mixed linear modeling of players' performance and a novel coding technique to determine and quantify:

- Individual trends in performance with training and use of Indian Gooseberry;
- A substantial performance increase in pre-test verses post-test;
- A substantial performance rise in competition verses training time trials
- A substantial performance increase with Indian Gooseberry

There is no literature in the research field which focused on comparing Indian Gooseberry Educational Intervention Group A versus Gooseberry knowledge understanding Group B nutritional awareness. Past research has been concentrated in comparing athlete's dietary intake versus energy expenditure only ⁹.

In summary, a training based nutrition knowledge intervention provides nutrition education to the athletes and modifies the menu to include well-liked, nutrient-dense food items which may be an effective way of promoting positive dietary choices ultimately resulting in the improved performance of the athlete. Further it is well documented that the Indian Gooseberry (amla) had a significant impact on sports performance of the selected subjects. Good nutritional information and sufficient nutrient consumption have been professed as the vital constituents that perform an elementary part in augmenting athletic performance¹⁸. In a joint position declaration, the American College of Sports Medicine, American Dietetic Association, and Dietitians of Canada recounted that "physical activity, athletic performance, and regaining from exercise are improved by optimum nutrition ⁵. During the period from 1985–2005, investigations observed the application that adjustments to a low-carbohydrate (<25 % energy), high-fat (>60 % energy) diet (LCHF) can enhance muscle fat consumption in the course of exercise and could boost performance in elite sportspersons by minimizing dependence on muscle glycogen⁴. The results of our study are in line with the above investigations which significantly improved the performance of the athletes after the intake of the nutrition.

An investigation piloted by⁶ observed the influence of carbohydrate loading on repetitive jump squat performance and established no rise in performance level when eight healthy men were administered a high carbohydrate diet and a low carbohydrate diet earlier to executing the test¹⁰. In his investigation found that high-fat diets will decrease muscle and liver glycogen concentrations and consequently performance may fall down. He further found that the impending gains of an adaptation period to a high-fat diet preceded by a phase of carbo-loading are not distinct but countless number of research accounts no influence on performance. These results are against our study due to the fact that the diet was given before the performing of the test while our study was with the training.

Conclusion

The outcomes of this investigation recommend that the efficient enactment of a nutritional educational protocol for sportspersons can transform participants' nutritional and dietary responsiveness. It was concluded that the intervention of Indian gooseberry significantly boosted the performance of the athletes.

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