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Chocolate milk: A post exercise drink among moderately physical activity students: A pilot study

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Abstract

This study examined the effect of chocolate milk as post exercise drink on moderate trained athlete. Thirty students were selected from Dr. MGR Educational and research institute, Chennai. The selected students were divided randomly in to two groups. The randomly selected participants are actively in physical activity and sports for minimum two years. The age of the participant was ranged from 17 to 22years. The selected variables of Physical indicator and behavior indicator were assessed by using stress indicator questionnaire. The selected variables physical indicator and behavior indicator were asses by stress questionnaire designed by the counseling team international. The participants were instructed to fill questionnaire in the beginning and at the end of the training. The obtained data were statistically analyzed with ANCOVA was used to find out the significant difference. In all the cases the criterion for statistical significance was fixed at 0.05 level of confidence ($P < 0.05$). Result showed that there is significant difference between two groups. Chocolate milk group (CMG) showed better improvement compared to without chocolate milk group.

Keywords: Chocolate milk, Physical indicator and behavior indicator

Introduction

“Chemically speaking, chocolate really is the world's perfect food”
—Michael Levine

The statement shows us how chocolate is important nutrients. If I say “give more chocolates to your kids it is one of the best nutrients”. Shocking isn't it? But that is true. Not only my recent research on this chocolate milk but lot of studies already proved. This is also one of the supporting documents to the studies. To develop good physique exercise is important to maintain good exercise nutritious food is one of the biggest factors. The consumption of pre and post workouts food will help us to maintain healthy life style.

After heavy workouts body in demand of nutrients, I would suggest get many nutrients as much as possible. In markets hundreds of protein bars and drinks are available mostly contains caffeine. If you choose protein shake for post-exercise drink without all supplement added. Our body can absorb only 20 grams of protein at one time regardless of daily requirements. Our body is good machine it will be better when it run with good fuel.

Stress and Bodily responses

Stress is a feeling of emotional or physical tension. It can come from any event or thought that makes you feel frustrated, angry, or nervous. Stress is your body's reaction to a challenge or demand. In short bursts, stress can be positive, such as when it helps you avoid danger or meet a deadline. But when stress lasts for a long time, it may harm your health.

Types of stress

The stress which stay for a lesser time and goes away quickly acute stress. Everyone face this kind stress; it happens when you're doing something new. In short-term it is good stress which helps you in tough situations.

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The stress which stay for longer time and keep disturbing you is known as Chronic stress. This is a kind of stress; all about thinking about the failure. The chronic stress may lead some serious health issue.

Review of related literature

Born *et al.*, (2019) ^[1] in is the first study comparing the impact of Chocolate Milk (CM) and Carbohydrate (CHO) on athletic outcomes in an adolescent population in a field-based environment. Chocolate Milk (CM) had a more positive effect on strength development and should be considered an appropriate post-exercise recovery supplement for adolescents. Future research will benefit from longer study durations with larger numbers of participants.

Hatchett *et al.* (2016) ^[2] They examined the effect that a chocolate milk solution (CMS) and a raw milk solution (RMS) had on lower extremity induced delayed onset of muscle soreness (DOMS). Both groups reported an increase in lower extremity discomfort at each data collection interval post-DOMS protocol (post, 24-, 48- and 72-h). Participants assigned to the RM group reported high discomfort post and a relative decline in discomfort from immediately post-DOMS protocol to 72-h post. The RMS group reported substantially less discomfort at 72-h when compared to the CMS group. Ingestion of a raw milk solution immediately post strength exercise can substantially reduce the level of self-reported discomfort associated with DOMS.

Pritchett and Pritchett (2012) ^[3] examined post-exercise nutritional strategies for enhanced training stimuli. Chocolate milk has become an affordable recovery beverage for many athletes, taking the place of more expensive commercially available recovery beverages. Low-fat chocolate milk consists of a 4:1 carbohydrate: protein ratio (similar to many commercial recovery beverages) and provides fluids and sodium to aid in post-workout recovery. Consuming chocolate milk (1.0-1.5•g•kg(-1) h(-1)) immediately after exercise and again at 2 h post-exercise appears to be optimal for exercise recovery and may attenuate indices of muscle damage.

Karp *et al.* (2006) ^[4] Time to exhaustion (TTE) and Total work (WT) were significantly greater for chocolate milk and FR trials compared to CR trial. The results of this study suggest that chocolate milk is an effective recovery aid between two exhausting exercise bouts.

Research Methodology

Population and Samples

Thirty students were selected Dr. MGR Educational and research institute, Chennai. The selected students were divided randomly in to two groups. The randomly selected participants are actively in physical activity and sports for minimum two years. The age of the participant was ranged from 17 to 22 years. The selected variables of Physical indicator and behavior indicator were assessed by using stress indicator questionnaire.

Procedure

Data and source of data

In the beginning of the test all thirty were instructed to run continuously for 45 minute with moderate phase they are allowed to slow down phase but keep run throughout the session. They were instructed to fill the stress questionnaire which design by the counseling team international. After that the groups were divided randomly in to two groups fifteen students of each group. From this pre test data were collected

Both groups were doing same set of training such those 45 minutes of running for three weeks. The first groups were instructed to drink 100ml chocolate milk after the exercise as a post exercise drink named as chocolate milk group (CMG) and the other group named as exercise group named as without chocolate milk group (WCMG). The without chocolate milk group follow their daily routine.

At the end of third week both the groups were instructed to fill the same stress questionnaire. From this post test data were collected

Experimental design and Statistical Technique

Quasi experimental design used for this study as being there is no control group involved.

The obtained data were statistically analysed with ANCOVA was used to find out the significant difference. In all the cases the criterion for statistical significance was fixed at 0.05 level of confidence ($P < 0.05$).

Physical Indicator

The analysis of one way ANCOVA on the data obtained for physical indicator (stress questionnaire) have been analyzed and presented in table I.

Table 1: Computation of analysis of covariance on physical indicator (Stress Questionnaire)

Pre test Mean		Post test Mean		Adjusted post test means		Sources of Variance	Sum of square	df	Mean squares	F ratio
CMG	WCMG	CMG	WCMG	CMG	WCMG					
34.2 ± 1.97	34.67 ± 1.89	27.2 ± 2.59	30.4 ± 2.50	27.34	30.26	Between	57.53	1	57.53	8.8*
						Within	176.51	27	6.54	

CMG-Chocolate Milk Group, WCMG- without chocolate milk Group,

*significant at 0.05 level of confidence

(The table value required for level of significance at 0.05 with df 1 and 27 is 4.21)

Table I shows the pre test mean of chocolate milk group and without chocolate milk group are 34.2 and 34.67 respectively and the post mean of chocolate milk group and without chocolate milk group are 27.2 and 30.4 respectively. The adjusted post test means of chocolate milk Group and without chocolate milk group are 27.34 and 30.26 respectively. The obtained f-ratio of 8.8 which is higher than the table value

4.21 with df 1 and 27 required for significance. The result of the study indicates that there are significant mean differences on Physical indicator (stress questionnaire) among the adjusted post test means of chocolate milk Group and without chocolate milk group at 0.05 level. Hence it may be concluded that the chocolate milk significantly improved the Physical indicator of the Participants.

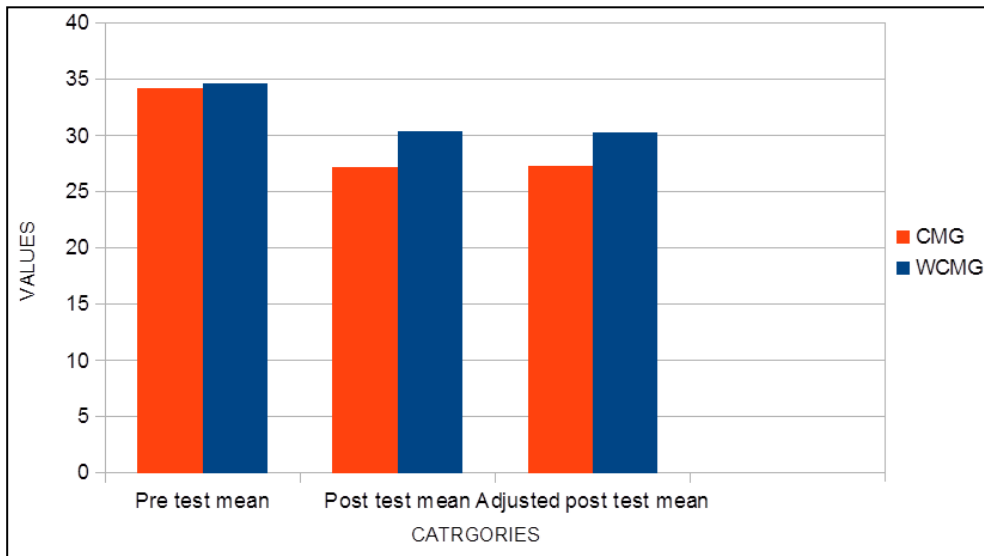


Fig 1: Physical Indicator

Behavior Indicator

The analysis of one way ANCOVA on the data obtained for

behavior indicator (stress questionnaire) have been analyzed and presented in table II

Table 2: Computation of analysis of covariance on behavior indicator (Stress Questionnaire)

Pre test Mean		Post test Mean		Adjusted post test means		Sources of Variance	Sum of square	df	Mean squares	F ratio
CMG	WCMG	CMG	WCMG	CMG	WCMG					
30.93± 2.93	30.47±1.2.82	21.33±2.63	23.73±2.52	21.27	23.79	Between	47.1	1	47.1	7.38*
						Within	172.2	27	6.38	

CMG-Chocolate Milk Group, WCMG- without chocolate milk Group, *significant at 0.05 level of confidence (The table value required for level of significance at 0.05 with df 1 and 27 is 4.21)

Table II shows the pre test mean of chocolate milk group and without chocolate milk group are 30.93 and 30.47 respectively and the post mean of chocolate milk group and without chocolate milk group are 21.33 and 23.73 respectively. The adjusted post test means of chocolate milk Group and without chocolate milk group are 21.33 and 23.73 respectively. The obtained f-ratio of 7.38 which is higher than

the table value 4.21 with df 1 and 27 required for significance. The result of the study indicates that there are significant mean differences on behavior indicator (stress questionnaire) among the adjusted post test means of chocolate milk Group and without chocolate milk group at 0.05 level. Hence it may be concluded that the chocolate milk significantly improved the behavior indicator of the Participants.

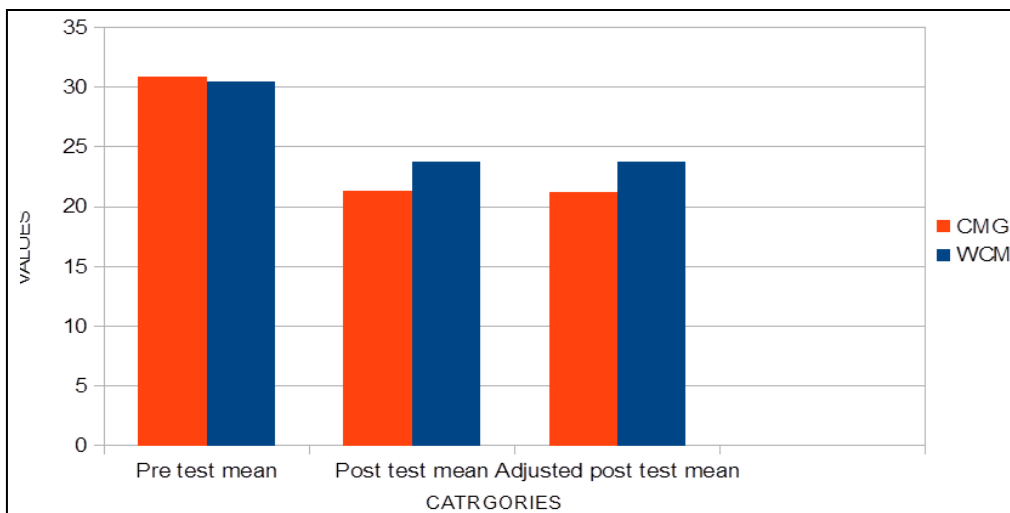


Fig 2: Behavior Indicator

Conclusions

On the basis of the finding of the study, the following conclusions were drawn.

1. There was significant difference between chocolate milk group (CMG) and without chocolate milk group (WCMG) on Physical Indicator and behavior indicator.

2. Chocolate milk groups (CMG) have lower value of physical indicator and behavior indicator when compared to without chocolate milk group (WCMG).
3. From the results it may concluded chocolate milk group (CMG) show better improvement compared without chocolate milk group (WCMG).

Recommendations for further studies

With the experience gained in this study and from the finding of the study. The investigator makes the following recommendations for further studies.

1. Similar studies may be conducted by selecting physiological variables.
2. The similar study may be conducted by taking other variables like blood and biochemical variables
3. The same study may be conducted on the players at different levels and on both sex.
4. It may be recommended to carry out similar study with women in different society.

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