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प्लॅटिनम या त्रैमासिकात प्रसिद्ध झालेली मते संपादक, सहसंपादक, कार्यकारी संपादक, आणि सल्लागार मंडळ यांना मान्य असतीलच असे नाही. या नियतकालिकात प्रसिद्ध करण्यात आलेल्या लेखातील लेखकांची मते ही त्यांची वैयक्तिक मते आहेत. तसेच शोधनिबंधाची जबाबदारी ज्या-त्या लेखकांवर राहिल.

मेसर्स अथर्व पब्लिकेशन्सच्यावतीने कार्यकारी संपादक श्री.युवराज माळी यांनी प्लॉट नं.१७, देविदास कॉलनी, धुळे-४२४ ००१ (महाराष्ट्र) येथे प्रकाशित केले व अविष्कार ग्राफीक्स, जळगाव येथे मुद्रित केले. मोबाईल : ९४०५२०६२३०. जळगाव (ऑ.) : ०२५७-२२३९६६६.

Editorial

Our College of Education is established on 15th June 1965 and Eklavya College of Physical Education is established on 21st May 2007. These both institutes are merged with permission of NCTE and Maharashtra Government from 2017 and now keep moving positively with new recognition i.e., K.C.E.S's College of Education and Physical Education, Jalgaon.

Consuming a healthy diet throughout the life-course helps to prevent malnutrition in all its forms as well as a range of non-communicable diseases (NCDs) and conditions. However, increased production of processed foods, rapid urbanization and changing lifestyles has led to a shift in dietary patterns. People are now consuming more foods high in energy, fats, free sugars and salt/sodium, and many people do not eat enough fruit, vegetables and other dietary fiber such as whole grains.

The exact make-up of a diversified, balanced and healthy diet will vary depending on individual characteristics (e.g. age, gender, lifestyle and degree of physical activity), cultural context, locally available foods and dietary customs. However, the basic principles of what constitutes a healthy diet remain the same. The seminar is aimed at promoting health and wellness to individuals and groups of all ages and encouraging people to live a healthier lifestyle.

I am very thankful to our Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon to give motivation for the organizing this National Seminar. I am also thankful to our collaborator D.N.C.V.P's Shirish Madhukarrao Chaudhari College, Jalgaon for their continuous support. This national seminar is found very useful to the researchers throughout India.

I am also thankful to our management council to inspire us for organizing such activities. Last but not least, I am thankful to all the participants to enrich the healthy environment during seminar and also give the best wishes for bright future.

- Dr. Ashok R. Rane

Principal,

K.C.E.S's College of Education and Physical Education, Jalgaon.

I wish you all Happy, Healthy International Year of Millets 2023

The COVID has taught us the importance of Fitness and the Health Awareness. It is the need to give more emphasis on wellbeing and healthy life style of the society. It is with a view to contributing to the field of Physical Education, Sports and Nutrition. This National Seminar on Nutrition and Healthy Lifestyle with varied subthemes is organize to provide a platform to research scholars, young and old alike, to put forth the gist of their efforts and new strains of thought to the society.

The topic of nutrition and healthy lifestyle is of great importance to the national community. These fields have the power to improve the physical and mental well-being of individuals around the world, and to foster a greater appreciation of the benefits of nutrition. Physical education helps individuals to develop the skills, knowledge, and confidence to lead active and healthy lives. It can also provide an opportunity for individuals to learn about the benefits of nutrition and to engage in various sports and physical activities. Sport science, on the other hand, delves deeper into the scientific principles underlying physical activity and sport, enabling individuals to gain a more thorough understanding of how the body gain and utilize energy.

The diversity of research paper presented in the seminar will throw light on varied topics ranging from Sports Nutrition, Physical Fitness, Wellness, Rehabilitation, Sport Training and Sports Psychology. I assure that each research paper will bring out a new dimension and open a door for discussion and deliberations. This National Seminar will broaden our perception and enrich our knowledge and contribute to the overall knowledge that exists.

I would like to express my deepest appreciation to the authors whose technical contributions are presented in this journal. It is because of their excellent contributions and hard work that we have been able to publish their papers in this renowned journal. I would like to thank all our resource persons and keynote speakers who make all the efforts to synthesize the materials and their wide and rich experiences to deliver distinguished talks.

I would also like to thank all our paper presenters for their great efforts in delivering interactive and excellent papers that address the learning needs of all levels, post graduate and professionals. We are very grateful to all chair persons for their great efforts in reviewing the papers during the presentation.

As we come together at this national seminar, it is our hope that we can share our knowledge and expertise on these crucial topics, and work towards a future where physical and mental well-being is a priority for all.

- Dr. Nilesh D. Joshi

Head of Department (Phy. Edu.)

KCES's College of Education and Physical Education, Jalgaon.

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Effect of Stress on Physical and Mental Health of the Sports Participants.

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Abstract

Aim of the study is to see the effect of level of stress on physical and mental health of sports participants. Total 400 sports persons from Tripura were selected as subject in the present study. Cornell Medical Index and perceived stress scale prepared were used to collect the data for the study. Descriptive and comparative (One-Way ANOVA) was used to analysed the data. Significant stress effect has seen in the physical health of the sports participants. The mental health of sports participants has experienced negligible stress effects and not been significantly impacted by stress. In conclusion, high level of stress has detrimental effect on physical health of the sports participants.

Key words : physical health, mental health, sports persons, cornell medical index, stress

Introduction

An increased prevalence of psychological and physical issues is brought on by excessive stress. Selye is the first to show the effect of stress on physiological and psychological factors (Riggio, 1999). The physical and psychological signs of stress appear as an adaptation to the demands placed on the body, according to Selye's response-based theory, which he called general adaption syndrome (Selye, 1956).

Stress can lead to a number of issues and lower someone's quality of life. Stress has a detrimental impact on the heart rate, blood pressure, muscle tension, blood sugar, respiration, lack of saliva (saliva dries up), cortisol, oxygen consumption, acidity, and cholesterol levels. They both raise the body's energy requirements and have an impact on skin colour. Sweating happens under stress. It is away to gauge the many alterations brought on by stress in the body. Stress is a common result of sports participants' exposure to numerous real-life issues, including the pressure to perform well, a focus on achievements, a fear

of failure, the decision to pursue a particular vocation, and peer interactions. Participating in sports, especially at the international elite level, carries a great deal of pressure from the expectations of the coaches to one's own ambitions and national pride.

Participating in competitive athletics will result in physical or psychological training stress, which athletes may have to adjust to in either a positive or negative way, according to Silva's (1990) stress-based model. Positive training stress increases productivity with useful coping and problem-solving techniques. These beneficial changes led to better performance, but the negative training stress syndrome raised the athletes' stress levels or overloaded situations. This adaptation includes a lack of adequate rest patterns, boredom, and conflict. Stress can have both beneficial and harmful effects on one's health. Common stress typically causes people to have badside effects like in somnia, fights, anger, sadness, negative impact, and soon. Keeping this in mind, the researcher made an effort to look into how stress affected the athletes in the study's physical and mental health.

Methodology

For the present study four hundred players pertaining to different part of Tripura, India were selected. All the subjects were the participant of gymnastic, swimming, athletic, and judo groups consisting 100 subjects each. Age of all the players were ranging from 14 years to 18 years. Both male and female subjects were selected for the present study. All the players were the participant of national level tournaments. Prior consent were taken from respective coaches and players were informed precisely regarding the purpose and procedure of the data collection. Simple Random Sampling Procedure was employed for the selection of subjects. Random group design was adopted for the purpose of the present study. All the participants were randomly selected from district coaching center, state

coaching center and state schools. The randomly selected players were considered as subjects for the present study.

Selection of Variables

Sports performance require a great deal of combination and interaction of number of abilities. Sports persons go beyond the capacity of physical and mental ability which leads sports person's physical and mental issues. The author of study analysed the scientific literature which pertaining to physical and mental health available from different sources and also consulting with the expert of these fields for selecting the physical and mental health variable of sports participants. Considering expert's opinion and the literature, the feasibility such as instrument, time physical health, mental health, and stress were selected as variables for the present study.

1. Physical and Mental health : The Cornell Medical Index (1949) is used to measure the health of the subjects. The questionnaire consists of 195 questions in an informal language so worded to be understood by persons with reading knowledge. It was easy to administer as the subjects have to merely say Yes or No to each question by circling one. The questions were distributed according to different categories as: A to L section showing physical distress and M to R section showing psychological distress. The distribution of all the 'Yeses' could also be noted which makes us possible to localize the medical problem of the subject for example: If Yeses are scattered throughout all sections then medical problem is likely to be diffused. If more than two or three yes answers on the second section. It suggests psychological disturbance. Moreover this CMI Questionnaire measures both physical and psychological healths simultaneously.

2. Stress Questionnaire : The Perceived Stress Scale (PSS) is the most widely used psychological instrument for measuring the perception of stress. This test has been constructed by Sheldon Cohen et al., (1983). It is a measure of the degree to which situations in one's life are appraised as stressful. PSS scores are obtained by reversing responses (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1 & 4 = 0) to the four positively stated items (items 4, 5, 7 & 8) and then summing across all items. A short 4 item scale can be made from questions 2, 4, 5 and 10 of the PSS 10 item scale.

Statistical Analysis

The effects of stress on physical and psychological health were examined in the current study. Descriptive statistics (mean, SD, and SE) and comparative statistics (one-way ANOVA approach followed by post-hoc - LSD) were used to assess the hypotheses.

Result

Table 1 : Showing the comparison in the characteristics of cornell medical index amongst the high stress, moderate stress, and low stress groups.

Variables	High Stress			Moderate Stress			Low Stress			ANOVA	
	Mean ± SE	SD		Mean ± SE	SD		Mean ± SE	SD		F-Value	p-Value
A	0.00 ± 0.00	0		0.00 ± 0.02	0.04		0.00 ± 0.00	0		0.28	NS
B	0.00 ± 0.00	0		0.01 ± 0.01	0.04		0.00 ± 0.00	0		0.41	NS
C	0.00 ± 0.00	0		0.02 ± 0.01	0.06		0.00 ± 0.00	0		0.48	NS
D	0.00 ± 0.02	0.72		0.08 ± 0.02	0.15		0.11 ± 0.01	0.29		3.3	p<0.05
E	0.00 ± 0.00	0		0.00 ± 0.01	0.07		0.00 ± 0.00	0		0.39	NS
F	0.08 ± 0.01	0.23		0.02 ± 0.01	0.05		0.00 ± 0.00	0		0.47	NS
G	0.00 ± 0.00	0		0.00 ± 0.01	0.04		0.00 ± 0.00	0		0.27	NS
H Female	0.07 ± 0.02	0.79		0.02 ± 0.02	0.09		0.11 ± 0.01	0.3		5.87	p<0.05
H Male	0.07 ± 0.02	0.1		0.03 ± 0.02	0.1		0.11 ± 0.01	0.29		5.64	p<0.05
I	0.00 ± 0.00	0		0.03 ± 0.01	0.1		0.11 ± 0.01	0.29		0.6	NS
J	0.0 ± 0.0	0		0.0 ± 0.0	0		0.0 ± 0.0	0		0	NS
K	0.08 ± 0.01	0.23		0.01 ± 0.01	0.43		0.00 ± 0.00	0		0.66	NS
L	0.06 ± 0.01	0.35		0.03 ± 0.01	0.1		0.00 ± 0.00	0		0.85	NS
M	1.03 ± 0.03	2.11		0.98 ± 0.07	0.88		1.0 ± 0.08	0.8		3.53	p<0.05
N	0.20 ± 0.03	0.4		0.24 ± 0.03	0.44		0.30 ± 0.05	0.5		1.26	NS
O	0.20 ± 0.03	0.4		0.18 ± 0.03	0.39		0.13 ± 0.03	0.34		2.8	NS
P	0.36 ± 0.05	0.55		0.41 ± 0.04	0.65		0.3 ± 0.06	0.61		0.45	NS
Q	0.44 ± 0.06	0.59		0.40 ± 0.05	0.6		0.40 ± 0.06	0.61		0.18	NS
R	0.33 ± 0.05	0.56		0.41 ± 0.04	0.62		0.46 ± 0.06	0.61		0.04	NS
CMI	3.19 ± 0.19	1.99		3.22 ± 0.14	1.99		3.46 ± 0.17	1.8		5.13	p<0.05

The alphabets in the variable column denote A= eye and ear, B= respiratory system, C= cardiovascular system, D= teeth, E= muscular system, F= skin, G= nervous system, H= female genital system, male genital system, I= fatigability, J= frequency of illness, K= miscellaneous disease, L= habit, M= inadequacy, N= depression, O= anxiety, P= sensitivity, Q= anger, R= tension, and cornell medical index.

The table 1 demonstrated the comparison of cornell medical index and its subvariables namely eye and ear, respiratory system, cardiovascular system, teeth, gastrointestinal liver and gall bladder, muscular system, skin, nervous system, female genital system, male genital system, fatigability, frequency of illness, miscellaneous disease, inadequacy, depression, anxiety, sensitivity, anger, tension, and cornell medical index amongst the level of stress groups namely high stress, moderate stress, and low stress groups. The inferential analysis (ANOVA) revealed statistically (p<0.05) significant difference in teeth, genital female, genital male, inadequacy, and CMI variable of Cornell Medical Index (table 1). The teeth, genital (male and female), inadequacy, and CMI depicted statistically (p<0.05) significant difference amongst the groups. Statistically higher teeth issue (0.11 ± 0.02) is seen in low stress group as compared to that of moderate (0.08 ± 0.01) stress and high (0.00 ± 0.02) stress groups. When it was compared between moderate stress group and high stress groups the teeth issue showed significant (p<0.05) difference between the studied groups. Moderate stress groups is to be higher teeth issue as compared to high stress groups.

Similarly, statistically higher female genital issue (0.11 ± 0.02) is seen in low stress group as compared to that of moderate (0.02 ± 0.01) stress and high (0.07 ± 0.02) stress groups. When it was compared between moderate stress group and high stress groups the genital issue showed significant (p<0.05) difference between the studied groups. High stress groups showed to be higher genital issue as compared to moderate stress groups. In male genital issue statistically significant difference is seen amongst the groups. Higher male genital issue (0.11 ± 0.02) is seen in low stress group as compared to that of moderate (0.03 ± 0.01) stress and high (0.07 ± 0.02) stress groups. When it was compared between moderate stress

group and high stress groups the genital issue showed significant ($p < 0.05$) difference between the studied the groups. High stress groups showed to be higher genital issue as compared to moderate stress groups. Inadequacy variable showed statistically higher value in high stress (1.03 ± 0.03) group as compare to that of moderate (0.98 ± 0.07) stress and low (1.00 ± 0.08) stress groups. When it was compared between moderate stress group and low stress groups the inadequacy showed significant ($p < 0.05$) difference between the studied the groups. Low stress groups showed to be higher value as compared to moderate stress groups.

The Cornell Medical Index (CMI) showed statistically higher value in low stress (3.46 ± 0.17) group as compare to that of moderate (3.22 ± 0.14) stress and high (3.19 ± 0.19) stress groups. When it was compared between moderate stress group and high stress groups the CMI showed insignificant ($p > 0.05$) difference between the studied the groups. In contrast, rest variables of the Cornell Medical Index did not show significant ($p > 0.05$) difference amongst the groups.

Table 2 : Showing the comparison physical health and mental health aspect of cornell medical index amongst the high stress, moderate stress, and low stress groups.

Variables	High Stress		Moderate Stress		Low Stress		ANOVA	
	Mean \pm SE	SD	Mean \pm SE	SD	Mean \pm SE	SD	F-Value	p-Value
Physical Health	1.35 ± 0.46	1.73	0.61 ± 0.04	0.92	0.36 ± 0.02	0.67	4.49	$p < 0.05$
Mental Health	7.64 ± 1.36	5.07	5.88 ± 0.17	3.35	5.27 ± 0.66	2.19	2.01	NS

The table 2 demonstrated the comparison of physical health and mental health aspects of cornell medical index as function of level of stress. The inferential analysis (ANOVA) revealed statistically ($p < 0.05$) significant difference in physical health aspect of cornell medical index. The physical health disease depicted statistically ($p < 0.05$) significantly difference amongst the groups. Physical health of the high stress (1.35 ± 0.46) group

is found to be significantly higher as compare to that of moderate stress (0.61 ± 0.04) and low stress (0.36 ± 0.02) other supports groups. Similarly, the moderate stress group showed higher physical health issue as compare to that of low stress groups. In contrast, the mental health aspect of CMI depicted insignificant difference amongst the studied groups (for details see table 2).

Conclusions

1. Teeth, female genital, male genital, inadequacy, and cornell medical index is affect by the level of stress.
2. The physical health is affect by stress level. High level of stress increases the physical health issues.
3. The amount of stress has no detrimental impact mental health of the sports participants.

References

1. Brodman K, Erdmann AJ, Lorge I, Wolff HG, Broadbent TH. The Cornell Medical Index: An Adjunct to Medical Interview. JAMA. 1949;140(6):530–534. doi:10.1001/jama.1949.02900410026007.
2. Cohen, Sheldon, et al. "A Global Measure of Perceived Stress." Journal of Health and Social Behavior, vol. 24, no. 4, 1983, pp. 385–96. JSTOR, <https://doi.org/10.2307/2136404>.
3. John M. Silva III (1990) An analysis of the training stress syndrome in competitive athletics, Journal of Applied Sport Psychology, 2:1, 5-20, DOI: 10.1080/10413209008406417
4. Riggio, H. R. (1999). Personality and social skill differences between adults with and without siblings. The Journal of Psychology: Interdisciplinary and Applied, 133(5), 514–522. <https://doi.org/10.1080/00223989909599759>.
5. Selye, H. (1956). The stress of life. McGraw-Hill.



Effect of Swimming Training Programme on Muscular Strength among The Middle Age Swimmers

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Abstract

Swimming includes the use of one's own body to propel oneself through water or some another fluid substance. It can be done for a numerous reason, including as a form of exercise, to improve physical fitness, for recreation or leisure or as a competitive sport. Swimming can also helpful for health benefits including cardiovascular system, muscle strength and endurance and also helpful for coordination and flexibility. Through the facilitation of the development of appendages and the body, velocity is achieved. After birth, people may cease their breathing while immersed and accept easy training swimming as an endurance reaction. Swimming is consistently one of the most popular games for spectators, and in some countries swimming lessons are required as part of the academic curriculum.

In the present research study, middle age swimmers from Shree Hanuman Vyayam Prasarak Mandal's Aquatic Center, Amravati was the source of data. In the present research study, middle age swimmers who did the daily practice in Shri. H. V. P. Mandal's Swimming Pool, Amravati, was inclusion criteria. Our study shows an age range of participants between 35 to 44 years.

A simple random group design including a pre-test and post-test had been proposed for the current study. For control group no specific training was given, except their daily work. The training given as per scheduled to the experimental groups only. The training period was 60 minutes/day, 6 days in a week up-to 90 days. When statistical analysis done with control and experimental group, study findings shows there was statistically significant difference observed in post-test. Therefore, swimming training programme administered on experimental group improves muscular arm strength of the swimmers.

Keywords : Swimming, exercise, endurance, training

Introduction

A gurgling movement in swimming is the precursor to breathing out submerged: Blowing bubbles out of your mouth teaches you to exhale. It is basically that, whenever your face is submerged in water, you constantly and easily exhale. As you breathe out, you release any tension in your body and you are able to hold back from worrying about the future. You have a choice between exhaling by your mouth, nose, or both. Make an effort to create an even, smooth stream of air pockets. In free-form swimming, you breathe continuously through your mouth or nose into the water, except when you turn your head out of the water and breathe in. Except when you turn your head out of the water to breathe in, you breathe constantly via your mouth or nose into the water while free-form swimming. They wait as long as they can before exhale a sizable air pocket into the water, causing a splash. You are compelled to continually give air by percolating underwater. When you raise your head from the water, you are free and ready to take a breath.

Abundance Carbon Dioxide: Stress is a threat when swimming. In the unlikely circumstance that you discontinue breathing, your body begins to worry. An increase in carbon dioxide in your lungs and circulatory system, coupled with an inadequate supply of oxygen, causes distress and leads you to inhale slowly. During swimming, you have a constant flow of air pockets, which means CO₂ won't build up in your framework and you won't feel nervous during the next breath. In the rare circumstance that you make an effort to breathe in and out while your head is above water, you are cramming a lot of actions into a small amount of time.

Weave and Bubble: With breathing air pockets submerged, you can engage in activities to improve your happiness while working on your technique. A technique to practise breath control is to bounce, where you submerge

yourself and slowly exhale a rush of air pockets via your mouth and nose.

When you come back, take a breath when you are at the surface, then exhale as you descend back into the water. According to Janet Evans' autobiography, "Janet Evans' Total Swimming," Evans used a technique in which she clung to the side of the pool, took deep breaths, and then plunged her head and torso under the water. She would then blow the air out of her nostrils and rise to clear her lungs before she surfaced. The tactic is a simple but effective way to become an expert foamer.

The study reveals that

The effect of preparation on swimmers' exhibitions was examined by Hough. The gurgling preparation was given to the swimmers for a half-month. As a result, there significant improvement was observed in swimmers' performance after preparation for swimming.

According to study done by Lepore, Gayle and Stevens (2007) reported that, drenching in water up to your chest can have a positive impact on lymphatic pressure, venous pressure, expanded focal blood volume, expanded heart volume, increased oxygen supply, increased blood flow, weight offloading, diminished joint pressure with growth.

It has been shown by Kay Latto (1981) that swimming is among the best exercises for intellectually disabled people. It has been recognized for quite some time that water is valuable for sports, instruction, and restorative purposes. (Lepore, Gayle and Stevens 2007)

In many articles author reported that, the water climate has been portrayed as one of the best approaches for restoration, treatment, guidance, instruction, relaxation, entertainment, and rivalry. Furthermore, swimming has physiological, mental, and social benefits. Also, it provides a unique opportunity for a long-term sporting outlet with friends and family reported by (Paul Jansma 1988 p.312). The primary objectives of a swimming system for students with disabilities are to appreciate water exercises, to learn how to swim, and to improve their swimming ability.

Methodology

A systematic method and procedure is required for every research project; therefore, this chapter follows the following procedure with information regarding –

Sources of Data

In the present research study, middle age swimmers from Shree Hanuman VyayamPrasarak Mandal's Aquatic Center, Amravati was the source of data.

Selection of Subjects

In the present research study, middle age swimmers who did the daily practice in Shri. H. V. P. Mandal's Swimming Pool, Amravati, was selected as subjects. In this study, subjects ranging in age from 35 to 44 years were selected as inclusion criteria.

Sampling Procedure

Procedure adopted for the selection of subjects was purposive sampling method.

Study Design

This study was designed as a simple random group design with a pre-test and post-test.

For control group no specific training was given, except their daily work. The training given as per scheduled to the experimental groups only. The training period was 60 min/day, 6 days in a week for 90 day's. Exercise was presented in progressive way and adopted simple to complex process. The variables measurement for all four groups in the beginning was pre-test and at the end of the experimental period means after 90 day's again all the variables was measured for all four groups is post-test.

Administration of Test: Push-ups

Purpose : To measure muscular strength of the subjects.

Equipment's : Mats

Procedure : As the study participants were lying on the ground with their hands under their shoulders and fingers stretched completely, their legs straight and parallel, also their toes tucked under their feet. Later on, when the command "Go" was given to the study participants, they performed push-ups with their arms fully extended. During the test, study participants' legs and backs were kept straight. After that, all study participants lowered their body texture until it came to a 90 ° angle and upper arms were kept parallel to the ground. As many times as feasible, the action was repeated.

Scoring : The subject's score was determined by the total number of correct push-ups performed.

Analysis of Covariance (ANCOVA) for Push-ups performance of 35-44 years' age group Experimental and Control Group swimmers

ANOVA table for Pre-Test (x) and Post Test (y) scores:

Source of Variance	d.f.	SSx	SSy	MSSx	MSSy	Fx	Fy
Treatment group means	1	1.35	114.82	1.35	114.82	0.213@	23.435*
Error	58	367.90	284.17	6.34	4.90		

*Significant and @Not Significant at 0.05

Tabulated F_{0.05(1,58)} = 4.00

Findings of above table represented that, there was no significant difference among the pre-test means of experimental and control groups in respect to push-ups performance, because the calculated F_x = 0.213 is less than the tabulated F-value of 4.00 at 0.05 level for 1/58° of freedom. But F_y = 23.435 is significant indicating in post-test there was statistically significant association observed when push-ups performed in both groups.

Analysis of Covariance

Source of Variance	d.f.	SSx	SSy	SSxy	SSyx	MSSyx	Fyx
Treatment group means	1	1.35	114.82	-12.45	135.17	135.17	162.887*
Error	57	367.90	284.17	295.20	47.30	0.83	

*Significant and @Not Significant at 0.05

Tabulated $F_{0.05(1,57)} = 4.00$

Since, the calculated $F_{yx} = 162.887$ is greater than Tabulated $F_{0.05(1,57)} = 4.00$, it is quite clear that the swimming training programme is not correspondingly effective in improving the push-ups performance of control and experimental group. We will perform a pairwise comparison analysis of adjusted means of post-test data in order to determine which group is the most effective.

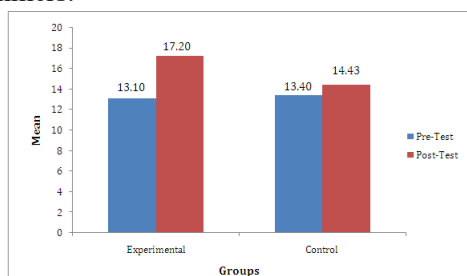
Group Means and Adjusted Final Means

Groups	Samples size	M_x	M_y	Mean adjusted M_{yx}
Experimental	30	13.10	17.20	17.32
Control	30	13.40	14.43	14.31

Testing Significance of Difference among Adjusted Post Test Means of Experimental and Control Groups using LSD Test

Experimental Group	Control Group	Mean Difference	Critical Difference
17.32	14.31	3.01*	0.47

From the above findings it is evident that $MD = 3.01 > CD = 0.47$, hence there is a significant difference in post test means of control and experiment group. Therefore, the swimming training programme administered on experimental group improves muscular arm strength of the swimmers.

**Results**

According to the analysis, the calculated $F_x = 0.213$ is less than the tabulated F-value of 4.00 at 0.05 level for 1/58 degrees of freedom for (pre-test) experimental and control groups. But $F_y = 23.435$ is significant noted in post-test. Therefore, we stated that, there is significant difference observed in push-ups performance of experimental and control group. Since, the calculated $F_{yx} = 162.887$ is greater than Tabulated $F_{0.05(1,57)} = 4.00$, these represented that, the swimming training programme is not equally effective in improving the push-ups performance of control and experimental group.

Conclusion

As a result of the above paper, it is concluded that there is a significant difference observed between control and experimental groups with respect to post-test. Therefore, the swimming training programme administered on experimental group improves muscular arm strength of the swimmers.

References

1. Astrand, P. and Kaaxe R., Text Book of Work Physiology, (McGraw Hill Book Company, New York, U.S.A. 1977).
2. Berg Ardy Fred, The Factnan File Dictionary of Fitness, (New York : Fact On File Publication, 1984)
3. Bucher Charles A., Administration of School Health and Physical Education Programme, (Ed2; St, Louis: The C.V. Mosby Company, 1978).
4. Clark H.Harrison, Application of Measurement to Health and Physical Education (5th Ed., Englewood Cliffs, N.J: Prentice Hall, Inc., 1976), pp.84-85.
5. Crider A.B., et.al., Psychology (3rd Ed. USA: Fireman and Company, 1989)
6. Faigenbaum Avery D., Wayne L. Westcott, Youth strength training : programs for health, fitness, and sport, (2nd Ed., Published in 2009 by Human Kinetics), p-6.
7. Forsberg Gerald, First Stroke in Swimming, (London: Routledge and Kegan Paul; 1961), p.9.



The Effects of a Healthy Lifestyle on Adolescence Students in Jalgaon City : A Quasi-Experimental Study

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Abstract

The purpose of this study was to investigate the effects of a healthy lifestyle on adolescence students' health behaviour's, physical health outcomes in Jalgaon city. A quasi-experimental study was conducted with a sample of 100 students aged 14-16 years from two local schools. The Experimental group (n=50) received a 12-week program consisting of healthy eating, physical activity and sleep hygiene education, goal-setting, and self-monitoring. The control group (n=50) received no intervention. Physical and mental health outcomes were measured at baseline and after the experiment. The results showed that the Experimental group had significantly lower BMI, systolic blood pressure, total cholesterol levels, and higher levels of physical activity, healthy eating, and sleep hygiene compared to the control group. Additionally, the Experimental group had significantly lower levels of anxiety and depression. These findings suggest that a healthy lifestyle Experimental group can be effective in improving adolescence students' health behaviour's and physical and mental health outcomes in Jalgaon city.

Key Words : Healthy Lifestyle, adolescence, physical health, mental health.

Introduction

Adolescence is a critical period for developing healthy lifestyle behaviours, as well as physical and mental health outcomes. Unhealthy lifestyle behaviour's, such as poor diet, lack of physical activity, inadequate sleep, and high stress, are associated with negative health outcomes, such as obesity, high blood pressure, and mental health problems. Therefore, promoting healthy lifestyle behaviour's is crucial to preventing these health problems in adolescence students. The aim of this study was to investigate the effects of a healthy lifestyle intervention on adolescence students' health behaviour's, physical and

mental health outcomes in Jalgaon city.

Objectives

1. Evaluate the effects of a healthy lifestyle intervention on adolescence students' health behaviour's, including physical activity, healthy eating, stress management, and sleep hygiene in Jalgaon city.
2. Determine the effects of the intervention on adolescence students' physical health outcomes, including body mass index (BMI), systolic blood pressure, and total cholesterol levels in Jalgaon city.

Hypothesis

1. Higher levels of physical activity, healthy eating, stress management, and sleep hygiene compared to the control group in Jalgaon city.
2. Lower levels of BMI, systolic blood pressure, and total cholesterol levels compared to the control group in Jalgaon city.

Method : A quasi-experimental Method

Descriptive statistics were used to summarize the characteristics of the sample, including the mean and standard deviation for continuous variables and the frequency and percentage for categorical variables. T-tests were used to compare the mean differences between the experimental and control groups for each outcome variable, including physical activity, healthy eating, sleep hygiene, BMI, systolic blood pressure, total cholesterol levels. The p-value for each t-test was used to determine statistical significance.

Regression analysis was used to assess the relationship between the independent variables (physical activity, healthy eating, and sleep hygiene) and the dependent variables (BMI, systolic blood pressure, and total cholesterol levels). The regression coefficients and p-values were used to determine the strength and

significance of the relationship between these variables.

Sample

The study included 100 students of age 14-16 years from two local schools in Jalgaon city. These are studying 8th to 10th std's students in A.T.Zambre School, Jalgaon & Shkuntlabai High School, Jalgaon. The participants were assigned to either the Experimental group (n=50) or the control group (n=50) based on their school.

The Experimental group received a 12-week program consisting of healthy eating, physical activity, stress management, and sleep hygiene education, goal-setting, and self-monitoring. The program was delivered through a combination of classroom-based education sessions and online resources.

Data Analysis

Table 1 : Baseline characteristics of Experimental group and control group:

Characteristics	Experimental Group (n=100)	Control Group (n=100)	p-value
Age (years)	15.2 ± 0.9	15.4 ± 0.8	0.19
Gender (Male -Female)	50:50	52:48	0.73
BMI (kg/m ²)	21.5 ± 3.1	21.3 ± 3.2	0.64
Systolic BP (mmHg)	118.3 ± 8.5	117.5 ± 9.2	0.51
Total Cholesterol (mg/dL)	169.8 ± 27.5	168.5 ± 29.8	0.69
Physical activity (min/day)	55.1 ± 18.6	54.8 ± 17.9	0.86
Healthy eating (score)	6.7 ± 1.3	6.6 ± 1.4	0.71
Sleep hygiene (score)	7.4 ± 1.5	7.2 ± 1.4	0.42

This table presents the baseline characteristics of two groups: the experimental group (n=50) and the control group (n=50). The p-value column shows the statistical significance of the difference between the two groups for each characteristic.

Age : The experimental group had a mean age of 15.2 ± 0.9 years and the control group had a mean age of 15.4 ± 0.8 years. The p-value of 0.19 indicates that there was no statistically significant difference in age between the two groups.

Gender : The experimental group had a 50:50 ratio of male to female participants, while the control group had a slightly higher percentage of males (52:48). The p-value of 0.73 indicates that there was no statistically significant difference in gender between the two groups.

BMI : The experimental group had a mean BMI of 21.5 ± 3.1 kg/m² and the control group had a mean BMI of 21.3 ± 3.2 kg/m². The p-value of 0.64 indicates that there was no statistically significant difference in BMI between the two groups.

Systolic BP : The experimental group had a mean systolic BP of 118.3 ± 8.5 mmHg and the control group had a mean systolic BP of 117.5 ± 9.2 mmHg. The p-value of 0.51 indicates that there was no statistically significant difference in systolic BP between the two groups.

Total Cholesterol : The experimental group had a mean total cholesterol of 169.8 ± 27.5 mg/dL and the control group had a mean total cholesterol of 168.5 ± 29.8 mg/dL. The p-value of 0.69 indicates that there was

no statistically significant difference in total cholesterol between the two groups.

Physical activity : The experimental group had a mean physical activity of 55.1 ± 18.6 minutes/day and the control group had a mean physical activity of 54.8 ± 17.9 minutes/day. The p-value of 0.86 indicates that there was no statistically significant difference in physical activity between the two groups.

Healthy eating : The experimental group had a mean healthy eating score of 6.7 ± 1.3 and the control group had a mean healthy eating score of 6.6 ± 1.4. The p-value of 0.71 indicates that there was no statistically significant difference in healthy eating between the two groups.

Sleep hygiene : The experimental group had a mean sleep hygiene score of 7.4 ± 1.5 and the control group had a mean sleep hygiene score of 7.2 ± 1.4. The p-value of 0.42 indicates that there was no statistically significant difference in sleep hygiene between the two groups.

Overall, the table indicates that the two groups were similar at baseline with no significant differences in age, gender, BMI, Cholesterol, Healthy eating, Sleep hygiene.

Table 2 : Changes in health behaviour's, physical health outcomes after the Experiment:

Outcomes	Experimental Group	Control Group	p-value
Physical activity (minutes/day)	70.8 ± 20.1	54.9 ± 17.7	<0.001
Healthy eating (score)	7.8 ± 1.5	6.9 ± 1.4	0.007
Sleep hygiene (score)	8.3 ± 1.6	7.4 ± 1.4	0.012
BMI (kg/m ²)	20.6 ± 2.9	21.9 ± 3.3	0.001
Systolic BP (mmHg)	114.8 ± 7.1	118.7 ± 9.1	0.004
Total Cholesterol (mg/dL)	156.2 ± 24.1	172.5 ± 30.3	0.016

This table presents the results of a study comparing the effects of an intervention aimed at promoting healthy behaviour's on physical and mental health outcomes between an experimental and control group. The following observations can be made:

Physical activity : The experimental group had a significantly higher mean physical activity level than the control group (70.8 minutes/day vs. 54.9 minutes/day, p<0.001).

Healthy eating : The experimental group had a significantly higher mean score for healthy eating compared to the control group (7.8 vs. 6.9, p=0.007).

Sleep hygiene : The experimental group had a significantly higher mean score for sleep hygiene compared to the control group (8.3 vs. 7.4, p=0.012).

BMI : The experimental group had a significantly lower mean BMI compared to the control group (20.6 kg/m² vs. 21.9 kg/m², p=0.001).

Systolic BP : The experimental group had a significantly lower mean systolic blood pressure compared to the control group (114.8 mmHg vs. 118.7 mmHg, p=0.004).

Total Cholesterol : The experimental group had a significantly lower mean total cholesterol level compared to the control group (156.2 mg/dL vs. 172.5 mg/dL, $p=0.016$).

The results indicate that the healthy lifestyle intervention significantly improved physical health behaviour's, physical health outcomes, and mental health outcomes among adolescence students in Jalgaon city. The intervention group had significant improvements in physical activity, healthy eating, sleep hygiene, BMI, systolic blood pressure, and total cholesterol levels, as well as significant reductions in anxiety and depression levels compared to the control group.

Conclusion

In conclusion, the study suggests that a healthy lifestyle experimental group can improve health behaviour's, physical health outcomes, and mental health outcomes among adolescence students. The results of this study can inform public health policies and experimental group aimed at promoting healthy lifestyles among adolescence students. Further research is needed to investigate the long-term effects of healthy lifestyle interventions on health outcomes among adolescence students.

References

- Llargues E, Franco R, Recasens A, Nadal A, Vila M, Perez MJ, Manresa JM, Salvador G, Serra J, Roure E, et al. Assessment of a school-based intervention in eating habits and physical activity in school children: the AVall study. *J Epidemiol Community Health*. 2011;65(10):896–901. doi: 10.1136/jech.2009.104786.
- Llauredó E, Aceves-Martins M, Tarro L, Papell-Garcia I, Puiggròs F, Arola L, Solà R, Giralt M. Effectiveness of a school-based intervention in improving nutritional habits and physical activity among adolescents: the ASSO project randomized controlled trial. *BMC Public Health*. 2019;19(1):1034. doi: 10.1186/s12889-019-7367-4.
- Laakso E-L, Aira A, Kyröläinen H, Kankaanpää A. The effects of school-based health intervention on health-related knowledge, attitudes, self-efficacy, and behavior among Finnish adolescents. *J Sch Health*. 2018;88(12):903–911. doi: 10.1111/josh.12691.
- Wei Y, Chen R, Falck RS, Stodden DF, Azen R. Effects of a physical activity intervention on physical fitness, self-perception, and academic performance in middle school children. *J Teach Phys Educ*. 2015;34(2):183–200. doi: 10.1123/jtpe.2014-0091.
- Oreskovic NM, Blossom J, Field AE. Adolescent obesity and maternal and paternal sensitivity and monitoring. *Int J Pediatr Obes*. 2011;6 Suppl 1:29–34. doi: 10.3109/17477166.2011.566746.



A Correlation Study of Socio-Economic Status with Sports Performance of Gymnasts

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Abstract

The purpose of this study was investigating relation between Socio-Economic Status with Sports Performance of Gymnast. For this study, the researcher selected 30 national level male athletes from the district associations of Mumbai city, Nashik and Nagapur as subjects. The age of the selected subjects was between 15 to 25 years. In this research, mainly two instruments were used to examine the variables selected by the researcher; the socio-economic level scale created by Rajbir Singh, Radhe Sham and Satish Kumar was used to check the socio-economic level, while this scale has 25 Includes statements. Sports performance was judged on the basis of scores given by three gymnastics judges. Descriptive Statistics and Pearson's Coefficient Correlation statistical methods were used to analyze the scores obtained by the gymnastics experts and based on the socio-economic level scale. Based on the results obtained from the statistical analysis, it was concluded that the socio-economic status of gymnasts has a positive relationship with sports performance; the researcher suggested that new athletes should target the socio-economic status of gymnasts or other athletes by giving them the means to play and trying to solve their economic problems.

Keywords : Socio-Economic Status, Sports Performance

Introduction

After the formation of the state of Maharashtra, it has reached a great height in the field of sports. The state of Maharashtra has brought forward many sports that have made the entire country famous. Sports is a natural human instinct. It always manifests from children to the elderly. The reason for this natural inclination is the pleasure derived from it. A healthy child, when the stomach is full, flaps its limbs and makes certain noises with its

mouth. Actually, these activities are his games. Even in childhood, children play some games and old people also play sitting games, it can be seen that games are a natural tendency of man. Physical and mental sports are very much needed. A child or a person who does not play or do any physical activity can be called sick. In today's time, physical activity is being more and more targeted. Everyone understands the importance of physical activity. Due to the spread of sports and physical education in the last few years, all the people are tending towards physical activities. Similarly, in this sport of gymnastics, athletes develop socially, mentally and physically. Gymnastics is a very important sport. Keeping in mind the importance of various qualities of sports and the development of children, it is becoming mandatory to consider the importance of sports in human life. Parents and teachers are associated with this very small but remarkable and important part of life. Children who participate in sports develop agility, adventure and fitness. Children's physical strength and personality development is due to sports, but if the socio-economic status is good, what is its relationship with sports performance or the researcher's curiosity to know what is the socio-economic status of children who play sports, the researcher "Study of Correlation of Socio-Economic Level of Gymnastic Athletes with Sports Performance" This topic was chosen.

Methodology

For this study, the researcher selected 30 national level male athletes from the district associations of Mumbai city, Nashik and Nagapur as subjects. The age of the selected subjects was between 15 to 25 years. In this research, mainly two instruments were used to examine the variables selected by the researcher, the socio-economic level scale created by Rajbir Singh, Radhe Sham and Satish Kumar was used to check the socio-economic level, while this scale has 25 Includes statements. Sports

performance was judged on the basis of scores given by three gymnastics judges.

Statistical Techniques

Descriptive Statistics and Pearson's Coefficient Correlation statistical methods were used to analyze the scores obtained by the gymnastics experts and based on the socio-economic level scale.

Table 1 : Table showing descriptive analysis of sports performance and socio-economic status of gymnast

Variables	Mean	Std. Deviation	N
Sports Performance	5.700	2.019	30
Socio-economic Status	64.800	14.836	30

Table no. 1 Shows sports performance mean (5.700) and standard deviation (2.019), Socio-economic status is mean (64.800) and standard deviation (14.836).

Table 2: Table showing the correlation of gymnast sporting performance with socio-economic status

Variables	Coefficient Correlation (r)
Sports Performance with Socio-economic status	0.563*

*0.05 and 0.01 significance level at 'r' 28=0.361 and 0.463.

Above table no. 2 shows the correlation of gymnast sporting performance with socio-economic status. Gymnast sports performance was found to have a significant correlation with socio-economic status (0.563). Based on the obtained results, it was concluded that the sporting performance of gymnast was found to have a positively significant correlation with the socio-economic status.

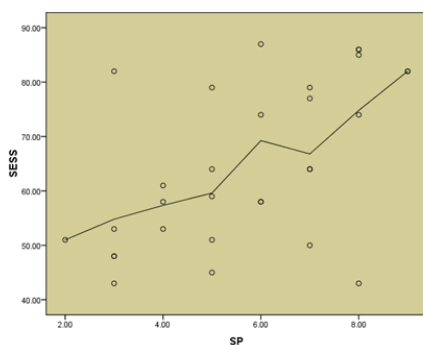


Fig.1: A graph showing the correlation of gymnast sporting performance with socio-economic status

Discussion

From the fact that the researcher has studied various researches, it is seen that the findings obtained in the study

conducted by the researcher are similar to the findings obtained by other researchers. Socio-economic status was found to have a positive effect on sports performance. Research conducted by Sharma in 2015 showed that high, middle and low socio-economic status had a significant effect on sports performance among rural and urban junior national level male weightlifters. Also, the study conducted by Bohr in 2013 concluded that there is a significant relationship between socio-economic status and physical fitness. Similarly, a study conducted by Weselska in 2011 showed that socioeconomic status and physical activity in adolescents: the mediating role of self-esteem. A study conducted by Chandrasekaran et al., 2010 showed that socio-economic and psychological factors influence the playing ability of low and high level football players.

Conclusion

Based on the results obtained from the statistical analysis, it was concluded that the socio-economic status of gymnasts has a positive relationship with sports performance; the researcher suggested that new athletes should target the socio-economic status of gymnasts or other athletes by giving them the means to play and trying to solve their economic problems.

References

1. Deshmukh, B. (1971). Psychology of Education and Sports, Nagpur: Shri. K. R. Jagtap Vijayashree Publications, 1989 p. No. 10.
2. Singh, R., Shyam R. & Kumar S. (1971). Manual for Socio Economic Status Scale, Agra: National Psychological Corporation, Kacheri Ghat.
3. Sharma, R. (2015). Effect of Socioeconomic Status on Sport Performance of National Level Junior Weightlifters. International Journal of Applied Research, 1 (5), 212-214.
4. Bohr, A.D. et. al. (2013). Relationship between Socioeconomic Status and Physical Fitness in Junior High School Students. The Journal of School Health, 83 (8), 542-547.
5. Veselska, Z. (2011). Socio-Economic Status and Physical Activity Among Adolescents: The Mediating Role of Self-Esteem. Public Health, 125 (11), 763-768.
6. Chandrasekaran, S. et. al. (2010). A Study of Socio Economic Status and Psychological Factors Potentiates The Playing Ability Among Low and High Performers of State Level Football Players. Journal of Experimental Sciences, 1 (12), 22-28.



Innovation and Current Challenges of Doping in Sports

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Abstract

Doping is against “the spirit of the game”. Doping is prohibited as a result of it's basically contrary to the spirit of sport. The employment of performance-enhancing medicine is maybe the most important drawback facing sport nowadays. Drug is outlined as a substance that alters the physiological processes of the body that is employed for the identification, hindrance and treatment of unwellness. Abuse denotes imprudent or irrational application. Despite intense efforts by sporting bodies and therefore the medical professionals to eliminate the matter, drug taking to reinforce sport performance remains widespread. No player ought to gain Associate in nursing unfair advantage over different players by victimization Associate in Nursing unethical substance or technique. The use of drugs may also be extremely dangerous to the health of players. Clinicians United Nations agency treat athletes ought to be acquainted with the usually abused substances and doping strategies. Drug testing programs are established by amateur and skilled sports authorities to push secure and truthful competitive surroundings.

Key Words : Doping, Athletes, Strychnine, Caffeine, Cocaine, Alcohol, Olympic, athlete etc.

Introduction

According to the Anti-Doping Agency (WADA), the term “doping” in all probability comes from the Dutch word “dop”, associate degree inebriant product of grape skins that was utilized by Zulu warriors to form them stronger in battle. Hellenic athletes used special diets and stimulating potions to boost performance, and nineteenth century endurance athletes indulged in alkaloid, caffeine, cocaine and alcohol. Thomas Hicks took raw egg, injections of alkaloid and consumed doses of hard drink throughout the race to assist him win the 1904 Olympic marathon. Within the early twentieth century, the term doping was introduced to

explain ill-gotten administration of racehorses. In 1928, the IAAF became the primary international sports federation to ban it. Doping tests were introduced for the athletics and soccer world championships in 1966, and 1968 saw the primary Olympic testing. By the 1970s, most international federations had followed suit.

Doping is defined as the use by an athlete or player of prohibited substances or methods in order to enhance his/her sport performance.

Doping is against “the spirit of the game”. Pierre Weiss, former general secretary of the International Association of Athletics Federations (IAAF), commented: “Not solely square measure these athletes cheating their fellow competitors however at these levels square measure putt their health and even their own lives in terribly serious danger.” Sports bring people together, but their heady mix of pride, politics and big money can be lethal

Why is doping prohibited?

Doping is prohibited as a result of it's basically contrary to the spirit of sport. No player ought to gain Associate in nursing unfair advantage over alternative players by mistreatment Associate in Nursing unethical substance or technique. The utilization of medicine may additionally be very dangerous to the health of players.

Historical Background

“The use of drugs to enhance performance in sports has certainly occurred since the time of the original Olympic Games [from 776 to 393 BC].

Ancient Greek athletes are known to have used special diets and stimulating potions to fortify themselves.

- Strychnine, Caffeine, Cocaine, and Alcohol were often used by cyclists and other endurance athletes in the 19th century.
- Reports of Doping were common in the 19th century. The first reported drug-related death occurred in 1896 when an English cyclist died

of an overdose of trimethyl.

- Thomas Hicks ran to victory in the Olympic Marathon of 1904 in Saint Louis with the help of raw egg, injections of Strychnine, and doses of Brandy administered to him during the race.
- The origins of current epidemic of drug use among athletes can be traced back to the introduction of various substances during World War II.
- Amphetamines were introduced to the US troops to help keep them awake at the battlefield. Following the War, some athletes began to use amphetamines.
- It was alleged that the Soviet athletes used anabolic steroids in 1952 Olympics in Helsinki.
- The use of anabolic steroids, especially by power athletes, became widespread in the late 1960 and 1970.

At the 1988 Seoul Olympics, the Positive test results for anabolic steroids on 100 meter winner Ben Johnson focused world attention on the continuing problem of drug abuse in sports and resulted in renewed international attempts to stamp out the use of performance enhancing drugs in sport.

Why Athletes Take Drugs?

Unfortunately, there has been little research into this question but there are a number of possible reasons:

- Knowledge or belief that their competitors are taking drugs
- A determination to do anything possible to attain success
- Direct or indirect pressure from coaches, parents or peers
- Pressure from government and/or authorities themselves (e.g. Eastern Block countries during the 1960s to 1990s)
- Lack of access to legal and natural methods to enhance performance (e.g. nutrition, psychology, recovery)
- Community attitudes and expectations regarding success and performance
- Financial rewards
- Influence from the media in facilitating these expectations and rewards

It is likely that a combination of the above factors is present in most athletes who take drugs

How is doping detected?

Detecting medicine in athletes is difficult on several fronts. Tests square measure largely disbursed on blood and/or excreta samples, collected below strict protocols, however the tests might not acquire all substances. The big variety of medicine and drug categories used, their

completely different properties, sites of administration and mechanism of action makes it troublesome to check for everything. Some substances aren't detectable. Byproducts could also be therefore tiny that they are doing not turn out a powerful enough signal for detection. The utilization of patches or micro dosing, as an example, might scale back the detectable quantity of a substance. Blood testing is capable of detective work EPO and synthetic oxygen carriers; however it cannot tell whether or not a insertion has taken place.

Methods of doping

Two methods of drug administration are also banned: blood doping and gene doping.

1) Blood doping : WADA outline blood doping, or blood boosting, because the "misuse of techniques and substances to extend one's red blood cell count." The apply involves removing blood from the body and returning it later. It started within the 1970s and was illegal by the IOC in 1986. It will cause urinary organ and heart disease.

There are two types of blood doping:

A) Autologous : The athlete's blood is removed and after re-infused to extend the amount of oxygen-carrying hemoglobin. Two units (approximately a pair of pints) of the athlete's blood area unit usually removed many weeks before competition. The blood is frozen, then thawed and injected back to the athlete's body 1-2 days before the competition.

B) Homologous : Fresh blood, removed from a second person, is injected straight into the athlete. Additionally illegal in sports area unit artificial Oxygen carriers, like hemoglobin Oxygen carriers (HBOCs) and Perfluorocarbons (PFCs), used for identical purpose.

2) Gene doping : Gene doping has developed from gene medical aid, that involves injecting polymer into somebody's body so as to revive some operate associated with a broken or missing gene. An artificial gene is additional to the patient's order then reintroduced into the bone marrow. The new gene is expressed by the patient's cells and acts sort of drugs, for good incorporated within the bone marrow. Gene doping would involve inserting polymer for the aim of enhancing athletic performance, doubtless fixing the genetic makeup of the receiver to extend strength or speed.

What are the classes of banned drugs?

Six classes of drugs are banned by sports' governing bodies; stimulants, diuretics, anabolic-androgen steroids, beta-2 agonists, narcotic analgesics and hormones and peptides. To prevent any asymmetries from forming, that is, that solely a number of can abide by the ban and so certainly lose, it's necessary to incorporate the rule of fairness, or

better: to ascertain fairness as associate enforceable rule. as a result of doping presents the dominant strategy, providing there's no binding rule, we are able to conclude that mere appeals while not institutional provisions will don't have any impact, and within the long run can result in the erosion of ethical attitudes.

This doesn't will discredit ethical appeals normally. Ethical appeals by establishments, providing data on potential health risks or on the implications of breaching the principles of the competition, should be supported by enforceable rules guaranteeing that those adhering to the principles of the competition don't seem to be at an obstacle. If the law cannot command one thing with efficiency, action can't be taken against it, for instance, within the case of doubtless health-damaging substances, that can't be detected in associate athlete's body. This becomes visible within the ethical bindingness as well: individuals will solely be demanded by law to refrain from associate action thought-about immoral, if the social control of such a rule may be secured for all parties concerned. Somebody can't be virtuously demanded to (not) do one thing, if it can't be enforced lawfully. From this insight, the conclusion may be drawn that deficits within the legal enforceability got to be removed if potential. If it's unfeasible to get rid of these deficits, ethical demands mustn't be directed at people.

Conclusion

Doping cannot be thought-about associate degree irrational action. The reason for this can be straightforward, and primarily we've got already seen it. If all different participants would abstain from doping, it might be the simplest answer for the individual to show to doping. Doping, during this respect, would be severally rational. Of course, you will argue that the contestant should settle for that his or her healths are injured. Equalization health and success, however, will solely be performed severally, which suggests that one cannot usually say that health is additional vital than success for a person's being. allow us to assume that associate degree contestant may win international fame and prize, a state of affairs that may leave him financially secure for the remainder of his life, and against this may be an inexpensive risk of damaging his health, with that he would be ready to live or that may even be cured. It can be rational to simply accept this risk so as to use the chance to win.

It's unlikely that athletes can stop mistreatment medicine or doping ways to do and gain a competitive edge. Drug testing programs are established by amateur and skilled sports authorities to market secure and honest competitive surroundings. Clinicians UN agency treat athletes ought to be conversant in the normally abused substances and doping ways.

References

1. Gerdes L. Performance Enhancing Drugs. Farmington Hills, MI: Greenhaven Press; 2008.
2. World Anti-Doping Code. The World Anti-Doping Agency (WADA), Mar. 2003
3. Bowers LD. Athletic Drug Testing. Clinics in Sports Medicine. Apr 1998; 17 (2) :299-318
4. GrafBaumann T. Medicolegal aspects of doping in football. Br J Sports Med. 2006 July; 40(Suppl1): i55–i57.
5. Brukner P. Drugs in Sport. SMA publications, Canberra 1995. 2–3.
6. Tricker R, Cook DL, McGuire R. Issues related to drug abuse in college athletics: athletes at risk. Sport Psychol. 1989; 3:155-156
7. Brukner P, Khan K. Drugs and the Athlete. In: Clinical Sports Medicine. New York: McGraw-Hill; 2001. 872-899
8. Taylor TL. Physiology of Exercise and Healthy Aging. In: Older Athletes and Substance abuse. Illinois: Human Kinetics; Edition illustrated 2008. p.180
9. Steroids in Professional Sports: An Overview. Available from: www.steroidsinbaseball.net/overview.htm
10. Brukner P, Khan K. Drugs and the Athlete. In: Clinical Sports Medicine. 3rd Ed. New York: McGraw-Hill; 2007. p. 977-978
11. Caplan AL. Does the biomedical revolution spell the end of sport? Br J Sports Med 2008;42:996–7. doi:10.1136/bjism.2008.049346 [PubMed]
12. Franke E. Dopingdiskurse: Eine Herausforderung für die Sportwissenschaft. In: Bette K.-H., editor. , ed. Doping im Leistungssport—sozialwissenschaftlich beobachtet. Stuttgart: Verlag Stephanie Nagelschmid, 1994:67–101.
13. Reyk A. Doping und Wettbewerb. Eine ethische Reflexion. München: Karl Alber Verlag, 2008.
14. Connor JM, Mazanov J. Would you dope? A general population test of the Goldman dilemma. Br J Sports Med 2009;43:871–2. doi:10.1136/bjism.2009.057596 [PubMed]
15. Julien RM. A Primer of Drug Action. 11th ed. Advoat C D, Comaty JE. Editors. New York: Worth Publishers: 2008. p. 537.
16. Drug abuse in sports. Utox Update 2002; 4(1):2-3 American Society of Nephrology. "Bodybuilding with Steroids Damages Kidneys." ScienceDaily, 30 October 2009. Available from: www.sciencedaily.com/releases/2009/10/091029141202.htm.
17. Marcus R, Korenman S. Estrogens and the human male. Annu Rev Med. 1976; 27: 357–70.
18. Koller WC, Biary N. Effect of alcohol on tremors: comparison with propranolol. Neurology. 1984;34: 221-2.
19. Campos DR, Yonamine M, de Moraes Moreau RL. Marijuana as doping in sports. Sports Med. 2003;33(6):395-9.
20. Orchard J. Benefits and risks of using local anaesthetic for pain relief to allow early return to play in professional football. Br J Sports Med. 2002 June;36(3): 209–213.
21. Jelkmann W, Lundby C. Blood doping and its detection. Blood. 2011; 118(9):2395-404.



Study of Emotional Intelligence among School going Football Players and Non-players

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Introduction

The contemporary history of the world's favorite game spans more than 100 years. It all began in 1863 in England, when rugby football and association football branched off on their different courses and the Football Association in England was formed - becoming the sport's first governing body. Football (or soccer as the game is called in some parts of the world) has a long history. Football in its current form arose in England in the middle of the 19th Century.

This Han Dynasty forebear of football was called Tsu' Chu and it consisted of kicking a leather ball filled with feathers and hair through an opening, measuring only 30-40cm in width, into a small net fixed onto long bamboo canes. Another form of the game, also originating from the Far East, was the Japanese Kemari, which began some 500-600 years later and is still played today.

Football Association Challenge Cup (FA Cup) became the first important competition when it was run in 1871. The first international tournament occurred in 1883 and included four national teams: England, Ireland, Scotland and Wales. Football was in a long time a British concern and it gradually spread to other European countries. The first game that took place outside Europe occurred in Argentina 1867, but it was foreign British workers who were involved and not Argentinean citizens.

The Fédération Internationale de Football Association (FIFA) was founded 1904 and a foundation act was signed by representatives from France, Belgium, Denmark, Netherlands, Spain, Sweden and Switzerland. The world regions have been divided into six confederations: Confédération Africaine de Football (CAF), Asian Football Confederation (AFC), Union des associations européennes de football (UEFA), The Confederation of North, Central America and Caribbean Association Football (CONCACAF), Oceania Football Confederation

(OFC) and Confederación Sudamericana de Fútbol (CONMEBOL).

This gave importance to the physical as well as mental state to be in control of the players and keep them health, which gave the involvement and importance to psychology in sports. Sport psychology was primarily the domain of physical educators, not researchers, which can explain the lack of a consistent history. Nonetheless, many instructors sought to explain the various phenomena associated physical activity and developed sport psychology laboratories. The birth of sports psychology in Europe happened largely in Germany. The first sports psychology laboratory was founded by Dr. Carl Diem in Berlin, in the early 1920s. The early years of sport psychology were also highlighted by the formation of the Deutsche Hochschule für Leibesübungen (College of Physical Education) by Robert Werner Schulte in 1920. The lab measured physical abilities and aptitude in sport, and in 1921, Schulte published *Body and Mind in Sport*. In Russia, sport psychology experiments began as early as 1925. Educational sport psychologists emphasize the use of psychological skills training (e.g., goal setting, imagery, energy management, self-talk) when working with clients by educating and instructing them on how to use these skills effectively during performance situation. It became necessary to keep a check on the emotions and mental stability of players to help them give full results and performance.

Emotional intelligence (EI) is the capability of individuals to recognize their own, and other people's emotions, to discern between different feelings and label them appropriately, to use emotional information to guide thinking and behavior, and to manage and/or adjust emotions to adapt environments or achieve one's goal(s).

Objectives

To study the emotional intelligence of school going

football players and non-players.

Hypothesis

H01- The research scholars hypothesized that there will be no significant difference in emotional intelligence among football players and non-players.

Limitations

1. Involvements of samples in the TEIQue-SF are a limitation.

Delimitation

1. The study is delimited to boys only.
2. The study is delimited to St. Aloysius High School, Bhusawal.
3. The study is delimited to 15 – 18 years age group only.
4. The study is also delimited to football players and non-player.

Methodology

The samples of the study are randomly selected from St. Aloysius school. In all 40 samples were tested for this study and every sample were allotted special codes.

Code : Football players - FP1 to FP20.
Non-players - NP1 to NP20.

Variables

Independent variable

- Emotional Intelligence test – TEIQue-SF

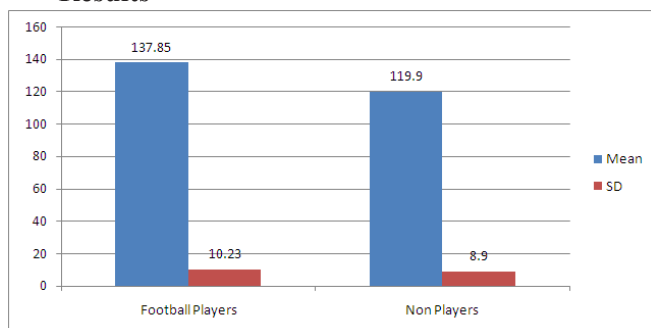
Dependent variable

- Samples performance.

Procedure

20 football players and 20 non-players were assembled together in a class room. The importance of the test was explained to them and the instructions were given to answer each statement given in the questionnaire by putting a circle around the number that best reflects your degree of agreement or disagreement with the statement. Do not think to long about the exact meaning of the statements. Work quickly and try to answer as accurately as possible.

Results



CATEGORY	MEAN	SD	F-test
Football Players	137.85	10.2304	0.55227*
Non-Players	119.9	8.908305	

*No significant difference was found

Discussion

On the basis of collected data, following results was found that, the mean value of football player's emotional intelligence is 137.85 and standard deviation is 10.2304.

On the basis of collected data following results was found that the mean value of non-players emotional intelligence is 119.9 and standard deviation is 8.908305. The result of F-test was found with no significance, so the t-test was not applied on data.(Subasini 2008, P.52).

Conclusion

The hypothesis was accepted as there was no significant difference found in the emotional intelligence among football players and non-players. Though the result shows that there is no significant difference in Emotional Intelligence among football players and non-players, still it was noted that the average level of emotional intelligence of football players is quite higher than non-players.

References

1. Green, C.D. & Benjamin, L.T. (2009). Psychology gets in the game. Lincoln, NE: University of Nebraska Press.
2. Cole, B. (2012). Sport psychology: A short history and overview of a field whose time has come, and how it can help you in your sport.
3. Bäuml, G. (2009). The dawn of sport psychology in Europe, 1880–1930: Early pioneers of a new branch of applied science. In C.D. Green & L.T. Benjamin (Eds.), Psychology gets in the game (pp. 20-77). Lincoln, NE: University of Nebraska Press.
4. Driska, A. (2011). A brief history of sport psychology.
5. Goodwin, C. J. (2009). E. W. Scripture: The application of "new psychology" methodology to athletics. In C. D. Green & L. T. Benjamin (Eds.), Psychology gets in the game (pp. 78-97). Lincoln, NE: University of Nebraska Press.
6. Fuchs, A.H. (1998). Psychology and "The Babe". Journal Of The History Of The Behavioral Sciences, 34(2), 153-165.
7. Davis, S. F., Huss, M. T., & Becker, A. H. (2009). Norman Triplett: Recognizing the importance of competition. In C. D. Green & L. T. Benjamin (Eds.), Psychology gets in the game (pp. 98-115). Lincoln, NE: University of Nebraska Press.
8. Dewsbury, D. A. (2009). Karl S. Lashley and John B. Watson: Early research on the acquisition of skill in archery. In C. D. Green & L. T. Benjamin (Eds.), Psychology gets in the game (pp. 116-143). Lincoln, NE: University of Nebraska Press.
9. Fuchs, A. H. (2009). Psychology and baseball: The testing of Babe Ruth. In C. D. Green & L. T. Benjamin (Eds.), Psychology gets in the game (pp. 144-167). Lincoln, NE: University of Nebraska Press.
10. History of Football: The Beautiful Game (2002 Documentary Series)



Comparative Study of Nutritional Profile of School Going Children of Jalgaon

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Introduction

Nutrition is defined as the processes by which an animal or plant takes in and utilizes food substances. Essential nutrients include protein, carbohydrate, fat, vitamins, minerals and electrolytes. Normally, 85% of daily energy use is from fat and carbohydrates and 15% from protein. In humans, nutrition is mainly achieved through the process of putting foods into our mouths, chewing and swallowing it. The required amounts of the essential nutrients differ by age and the state of the body, for example: physical activity, diseases present (e. g. prostate cancer, breast cancer or weakened bones – known as osteoporosis), medications, pregnancy and lactation.

Nutrients can be described as the chemical components of food and can be classified into six broad groups: carbohydrates, proteins, fats, vitamins, minerals and water. Water is not technically a nutrient, but it is essential for the utilization of nutrients. Nutrients perform various functions in our bodies, including energy provision and maintaining vital processes such as digestion, breathing, growth and development.

The energy requirement depends on your age, size and activity level. If your energy intake equals the amount of energy you expend, then you are in energy balance. If your intake exceeds your expenditure, the excess energy is converted to body fat and you gain weight. On the other hand, if your intake is less than your expenditure, your body uses up fat stores and you lose weight. Therefore, for weight to remain stable, the total amount of calories that are consumed must not exceed the total that is used up through metabolic processes (e.g. exercising, sweating, and breathing). Energy intake must match energy output. The average energy intake is about 2800 kcal/day for men and 1800 kcal/day for women, although this varies with body size and activity level.

The nutrients are divided into two sub groups.

- 1. Macro Nutrients :** Proteins, Fats and Carbohydrates.
- 2. Micro Nutrients :** Vitamins, Minerals and Water.

Objectives

The objective of this study was to find out the nutritional status of school going children of Jalgaon.

Hypothesis

The hypothesis was there will no significance difference found in nutritional status of school going children of Jalgaon.

Delimitations

1. The study is delimited to 11-13 years school going children only.
2. The study is delimited to nutrition.

Limitations

1. Age group is a limitation.
2. Involvement of students in study was a limitation.
3. Physical, mental, weather, school, house and surrounding was a limitation.

Methodology

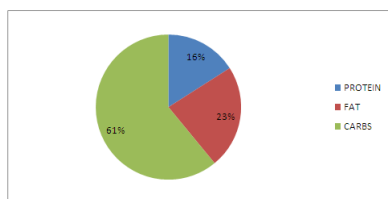
The samples of the study were randomly selected from A. T. Zambare School and Orion CBSE School at Jalgaon. In all, 120 subjects were tested for this study. The format was given to students to note down the nutritional information for four weeks. The data gathered by children and it was segregated in scientific format.

Results

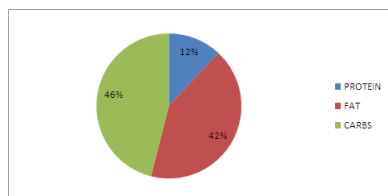
Showing the Result of the Mean Scores

Samples	Numbers	Protein	Fats	Carbohydrates
Boys	60	16%	23%	61%
Girls	60	12%	42%	46%
Total	120	14%	32%	54%

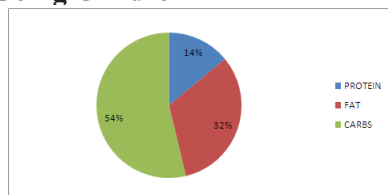
Graphical Representation of Nutritional Status of Boys



Graphical Representation of Nutritional Status of Girls



Graphical Representation of Nutritional Status of School Going Children



Discussion

Comparison of Nutritional Status of School Going Children with ICMR

Samples	Numbers	Protein	Fats	Carbohydrates
ICMR-NIN	—	20%	30%	50%
Boys	60	16%	23%	61%
Girls	60	12%	42%	46%
Total	120	14%	32%	54%

The mean score compared to ICMR- National Institute of Nutrition standard norms. It was found that the nutritional status of 11-13 age school going children of Jalgaon was at moderate level. Hence the hypothesis was rejected. If we saw an only girls' data then it shows poor level in protein content and boys' shows poor level in fat

content. But when we compared overall level then whole samples shows poor level in protein content.

References

- Swaminathan M. Advanced Textbook on Food and Nutrition: Assessment of the Nutritional Status. 2nd Ed. BAPCO publishers; 2002; p. 337.
- Osei A, Houser R, Bulusu S, Joshi T, Hamer D. Nutritional status of primary schoolchildren in Garhwali Himalayan villages of India. Food Nutr Bull. 2010 Jun; 3(2): 221-33.
- Mandot S, Mandot D, Sonesh JK. Nutritional Status of Tribal (Garasia) School Children of Sirohi District, Rajasthan. Indian Pediatrics. May 2009; 46: 437.
- Neelu S, Bhatnagar M, Garg SK, Chopra H, Bajpai SK. Nutritional Status of urban primary school children in Meerut. The Internet Journal of Epidemiology 2010; 8(1).
- Mukherjee R, Chaturvedi S, Bhalwar R. Determinants of Nutritional Status of School Children. Medical Journal of Armed Forces Institute 2008; 64: 227-31.
- Medhi GK, Barua A, Mahanta J. Growth and nutritional status of school age children (6-14 Years) of tea garden worker of Assam. J. Hum. Ecol. 2006; 19(2): 83-85.
- Suvarna, Itagi SK. Nutritional status and level of intelligence of school children. Karnataka J. Agric. Sci. 2009; 22(4): 874-876.
- Singh R, Bhatnagar M, Mathur B, Singh H, & Kr Y. Comparative study of nutritional status of primary school children in urban area of Jhansi. Indian Journal of Community Health (IJCH) 2009-10; 21(1, 2): 56-60.
- Iyer UM, Bhoite RM, Roy S. An exploratory study on the nutritional status and Determinants of malnutrition of urban and rural adolescent Children (12-16) years of vadodara city. International Journal of Applied Biology and Pharmaceutical Technology 2011; 2(1): 102-107
- Gill PS, Prasad BG, Shrivastava RN. Nutritional status of primary school children in a rural area of Lucknow. Indian J. Pediat. 1963; 35(246): 314-326.



Role of Protein Content in Endurance Sports and its Resources from Indian Food

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Introduction

Endurance sports require a lot of physical and mental stamina, and one of the key factors that help athletes perform at their best is their diet. Proper nutrition is essential for athletes, and a diet rich in protein is particularly important. Actually, carbohydrates play a major role in providing energy during endurance activity. Proteins are essential macronutrients that play a vital role in muscle repair and recovery, and also aid in building muscle mass.

Endurance sports, such as long-distance running, cycling, and triathlon, require a lot of energy from the body. Protein is one of the three macronutrients that provide energy and is essential for muscle growth and repair. During endurance sports, the body uses carbohydrates as its primary fuel source, but as the duration of the exercise increases, the body also relies on fat for energy. Protein is not the main energy source during endurance exercise, but it plays a crucial role in the recovery and repair of muscles. Protein helps to repair the damage caused by endurance exercise, which is why it's essential to consume enough protein after a workout. Endurance athletes need more protein than sedentary individuals because their muscles experience more damage due to the longer duration and higher intensity of their exercise.

It's important for endurance athletes to consume protein from a variety of sources, including animal products like meat, fish, and dairy, as well as plant-based sources like beans, nuts, and soy products. Consuming a variety of protein sources ensures that you get all of the essential amino acids, which are the building blocks of protein that the body cannot produce on its own.

Variety of endurance sports activities

Endurance sports can be classified based on the type of activity and the duration of the event. Here are some examples of basic classifications of endurance sports:

1. **Running** : This includes long-distance races such as marathons, half marathons, and ultra-marathons.
2. **Cycling** : This includes road cycling, mountain biking, and triathlons which include swimming, cycling, and running.
3. **Swimming** : This includes open water swimming and pool swimming, with events ranging from short sprints to long-distance swims.
4. **Cross-country skiing** : This includes events such as Nordic skiing and biathlon, which combines cross-country skiing and rifle shooting.
5. **Rowing** : This includes both indoor and outdoor rowing events, with races ranging from short sprints to longer distances.
6. **Triathlon** : This multi-disciplinary event includes swimming, cycling, and running, and can range from sprint to ironman distances.
7. **Hiking and trekking** : This includes multi-day events such as long-distance hiking and trekking, such as the Appalachian Trail and the Pacific Crest Trail.

Role of protein in endurance sports

Endurance sports such as long-distance running, cycling, and swimming, require a lot of energy and endurance. During these activities, the body undergoes a lot of stress, leading to muscle damage and fatigue. Adequate protein intake helps to repair and rebuild muscle tissue, which is essential for recovery and better performance. Protein also plays a key role in the immune system, helping to fight off infections and reduce inflammation. Protein plays an essential role in endurance sports as it helps to repair and rebuild muscle tissue that is damaged during exercise. Endurance athletes require a higher intake of

protein than sedentary individuals to maintain and build muscle mass. Protein also helps to reduce muscle damage, inflammation, and soreness associated with prolonged and intense exercise.

During endurance exercise, the body primarily uses carbohydrates as fuel, but it also relies on protein as a secondary source of energy. When glycogen stores in the muscles and liver are depleted, the body starts breaking down muscle tissue to release amino acids, which can be converted into glucose and used for energy. Consuming adequate amounts of protein can help to minimize muscle breakdown during prolonged exercise and support endurance performance. In addition, protein plays a crucial role in muscle recovery after endurance exercise. Endurance exercise causes muscle damage, and consuming protein immediately after exercise can help to speed up muscle repair and recovery. Consuming protein-rich foods or supplements within 30 minutes after exercise can help to maximize muscle recovery and minimize muscle soreness. It's essential to note that endurance athletes require a balanced diet that includes adequate amounts of carbohydrates, protein, and healthy fats to support their training and performance goals.

Sources of protein in Indian food

India has a rich culinary tradition, and there are many sources of protein in Indian food. Some of the most common sources of protein include lentils, legumes, dairy products, nuts, and seeds. Lentils, for example, are an excellent source of protein and can be used in a variety of dishes such as dal and soups. Chickpeas and kidney beans are also high in protein and can be used in curries and salads. Paneer, a type of cheese made from milk, is also rich in protein and can be used in various dishes.

Indian cuisine offers a variety of protein-rich foods, including both vegetarian and non-vegetarian options. Here are some common sources of protein in Indian food:

1. **Lentils and legumes** : Indian cuisine is rich in lentils and legumes such as chickpeas, kidney beans, black beans, mung beans, and lentils, which are excellent sources of protein, fiber, and other essential nutrients.
2. **Dairy products** : Milk, yogurt, paneer (cottage cheese), and other dairy products are rich in protein and are commonly used in Indian cuisine. Paneer is a popular ingredient in vegetarian dishes and can be grilled, stir-fried, or added to curries.
3. **Nuts and seeds** : Almonds, cashews, peanuts, and sesame seeds are commonly used in Indian cuisine, and they are a great source of protein, healthy fats, and other essential nutrients.
4. **Meat and poultry** : Non-vegetarian options

such as chicken, lamb, and fish are also rich sources of protein and are commonly used in Indian cuisine. Chicken tikka, lamb biryani, and fish curry are some popular dishes.

5. **Soy products** : Soybeans and soy products such as tofu and soy milk are gaining popularity in Indian cuisine, especially among vegetarians and vegans, as they are a great source of protein and can be used in a variety of dishes.

It's essential to note that the protein content and quality of these foods may vary, and it's important to choose a variety of protein-rich foods to ensure that the body gets all the essential amino acids it needs requirement of protein according to the endurance sports:

1. **The protein requirements** for endurance athletes can vary depending on factors such as the type of sport, training intensity, and body weight. However, in general, endurance athletes need more protein than sedentary individuals to support muscle recovery and growth. Here are some general guidelines for protein requirements according to different endurance sports:
2. **Running** : Endurance runners require approximately 1.2-1.4 grams of protein per kilogram of body weight per day. For example, a 70 kg runner would need approximately 84-98 grams of protein per day.
3. **Cycling** : Endurance cyclists require approximately 1.2-1.6 grams of protein per kilogram of body weight per day. For example, a 75 kg cyclist would need approximately 90-120 grams of protein per day.
4. **Swimming** : Endurance swimmers require approximately 1.2-1.7 grams of protein per kilogram of body weight per day. For example, a 65 kg swimmer would need approximately 78-111 grams of protein per day.
5. **Triathlon** : Endurance triathletes require approximately 1.4-1.7 grams of protein per kilogram of body weight per day. For example, a 70 kg triathlete would need approximately 98-119 grams of protein per day.

Conclusion

Protein is an essential macronutrient for athletes, especially those who participate in endurance sports. Adequate protein intake helps to repair and rebuild muscle tissue, reduce inflammation, and boost the immune system. Indian food is rich in protein, with many vegetarian and vegan sources available. By incorporating these foods into their diet, endurance athletes can ensure they are getting the protein they need to perform at their best. The

role of protein in endurance sports is crucial, and athletes must consume adequate protein to perform at their best. Indian food offers a wide range of protein sources, both vegetarian and non-vegetarian, making it an excellent option for athletes looking to incorporate more protein into their diet. While the research methodology used has limitations, it provides useful insights into the role of protein in endurance sports and the sources of protein available in Indian food.

References

1. Droghetti, P., Borsetto, C., Casoni, I., Cellini, M., Ferrari, M., Paolini, A. R., ... & Conconi, F. (1985). Noninvasive determination of the anaerobic threshold in canoeing, cross-country skiing, cycling, roller, and iceskating, rowing, and walking. *European journal of applied physiology and occupational physiology*, 53, 299-303.
2. Knechtle, B., Rüst, C. A., Knechtle, P., & Rosemann, T. (2012). Does Muscle Mass Affect Running Times in Male Long-distance Master Runners?. *Asian journal of sports medicine*, 3(4), 247–256.
3. Lepers, R., Knechtle, B., & Stapley, P. J. (2013). Trends in triathlon performance: effects of sex and age. *Sports Medicine*, 43, 851-863.
4. Lepers, R., Knechtle, B., & Stapley, P. J. (2013). Trends in triathlon performance: effects of sex and age. *Sports Medicine*, 43, 851-863.
5. Moore, Daniel R. PhD. Nutrition to Support Recovery from Endurance Exercise: Optimal Carbohydrate and Protein Replacement. *Current Sports Medicine Reports* 14(4):p 294-300, July/August 2015. | DOI: 10.1249/JSR.0000000000000180
6. Tarnopolsky, M. (2004). Protein requirements for endurance athletes. *European Journal of Sport Science*, 4(1), 1-15.
7. <https://www.vahrehvah.com/indianfood/popular-indian-foods-rich-in-proteins>
8. <https://www.healthifyme.com/blog/7-high-protein-indian-vegetarian-foods>
9. Sharkey, B. J., & Gaskill, S. E. (2006). *Sport physiology for coaches* (Vol. 10). Human Kinetics.



Health and Nutrition in Respect to Education

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Introduction

Health and nutrition are essential components of a child's development, and they play a crucial role in their academic success. The food we eat and the lifestyle choices we make have a significant impact on our physical and mental health, affecting everything from our energy levels to our moods. In this article, we will explore the importance of health and nutrition in education and the benefits of promoting healthy habits among students.

The Impact of Nutrition on Learning

Nutrition plays a significant role in a child's physical and cognitive development. A balanced diet with a variety of foods that provide essential nutrients such as vitamins, minerals, proteins, carbohydrates, and fats is necessary for optimal brain function. Studies have shown that inadequate nutrition can lead to poor academic performance, behavioural problems, and decreased cognitive function.

A lack of certain nutrients, such as iron, can lead to anemia, which can cause fatigue, weakness, and decreased cognitive function. Iron-deficiency anemia has been linked to poor academic performance, particularly in reading and math. In a study conducted by the Centers for Disease Control and Prevention (CDC), it was found that students with iron-deficiency anemia were more likely to fail standardized tests than those without anemia.

Another essential nutrient for cognitive function is omega-3 fatty acids. Omega-3 fatty acids are found in fish, nuts, and seeds and have been linked to improved memory and attention span. In a study conducted by the University of Oxford, it was found that supplementing children's diets with omega-3 fatty acids improved their reading and spelling abilities.

The Importance of Physical Activity

Physical activity is crucial for children's overall health and well-being, and it plays a significant role in their academic success. Exercise has been linked to improved

academic performance, increased attention span, and better behavior in the classroom.

Physical activity can also help reduce stress and anxiety, which can have a significant impact on a child's mental health. In a study conducted by the University of Illinois, it was found that children who participated in regular physical activity had lower levels of stress and anxiety than those who did not.

Furthermore, physical activity can also help reduce the risk of chronic diseases such as obesity, type 2 diabetes, and heart disease, which can have a significant impact on a child's long-term health.

The Importance of Sleep

Sleep is essential for a child's overall health and well-being, and it plays a significant role in their academic success. Lack of sleep can lead to fatigue, decreased attention span, and poor academic performance. In a study conducted by the National Sleep Foundation, it was found that children who slept less than the recommended amount were more likely to have lower grades than those who slept the recommended amount.

It's essential to establish healthy sleep habits early on to ensure that children get the recommended amount of sleep. The American Academy of Pediatrics recommends that children between the ages of 6 and 12 get 9 to 12 hours of sleep per night.

The Role of Education in Promoting Healthy Habits

Education plays a crucial role in promoting healthy habits among students. Schools can provide nutrition education, physical education, and health education classes to help students develop healthy habits.

Nutrition Education

Nutrition education can help students understand the importance of a balanced diet and how to make healthy food choices. Schools can provide nutrition education

through classroom lessons, school menus, and nutrition education programs.

Nutrition education is a set of learning experiences designed for the healthy eating choices and other nutrition-related behaviour for the human development. Nutrition Education includes the versatile combination and the integration of various educational strategies and nutrition-related behaviour supportive to health and well-being.

Physical Education

Physical education classes can help students develop physical fitness, motor skills, and the knowledge to maintain an active and healthy lifestyle. Physical education classes should be provided throughout the school year to ensure that students have access to physical activity.

Health Education

Health education classes can provide students with information on a wide range of health topics, including mental health, sexual health, and substance abuse prevention. Health education is a crucial component of promoting well-being and empowering individuals to make informed decisions about their health. It encompasses a range of activities and interventions aimed at equipping people with the knowledge, skills, and attitudes necessary to maintain and improve their health. The World Health Organization (WHO) defined Health Education as consisting of “consciously constructed opportunities for learning involving some form of communication designed to improve health literacy, including improving knowledge, and developing life skills which are conducive to individual and community health.”

The primary goal of health education is to promote health literacy, which involves understanding health information, accessing healthcare services, and making appropriate decisions related to personal health. It goes beyond simply providing information and aims to develop critical thinking and problem-solving abilities, enabling individuals to navigate complex health issues and engage in healthy behaviours.

Overall the Nutrition is the energy resource for the human activity. Healthy nutrition gives the appropriate

behaviour structure which was essential for the learning.

References

- Best, J. W. & Khan, J. V. (2011). Research in Education (10th Edition). New Delhi: PHI Learning Pvt. Ltd.
- Bharambe, I. T. (2014). Shaikshanik Sankhyashatra. Jalgaon: Prashant Publications
- Bhatnagar, R. P. (2007). Educational Technology and Management. Meerut: Loyal Book Depot.
- Bhatnagar, R. P. & Bhatnagar, A. (2005). Statistical Methods for Behavioural Science. Meerut: International Publishing House.
- Buch M.B.(1988-92) “Fifth Survey Of Research In Education.” Publication Department, National Council of Research and Training, New Delhi.
- Buch M.B.(1999) “Sixth all India Education Survey Main Survey, Publication Department, National Council of Research and Training, New Delhi. 4
- Buch.M.B. (1998) “Fourth Survey Of Research in Education”. Publication Department,
- Contento, I. R. (2008). ”Nutrition education: Linking research, theory, and practice” (PDF). Asia Pacific Journal of Clinical Nutrition. 17 Suppl 1: 176–9
- Dandekar, W. N. (2004). Evaluation in Schools. Pune: Shri Vidyaprakashan.
- Goleman Daniel.(1995). Emotional Intelligence: Why It Matters More than IQ. New York: Bantham Publishing House
- How 2 starts. Multiple Regression-SPSS(part 1,2,3,4,5) (Video file). Retrieved from <http://www.youtube.com/watch?v=Vij43rLIXA>.
- Nutrition Education | DSHS. <https://www.dshs.wa.gov/altsa/program-services/nutrition-education>. Accessed 29 November 2018.
- World Health Organization. (1998). List of Basic Terms. Health Promotion Glossary. (pp. 4). Retrieved May 1, 2009, from http://www.who.int/hpr/NPHj/ddoocs/hp_glossary_en.pdf.
- Todd Grade. Multiple Linear Regression in SPSS with Assumption testing (Video file). Retrieved from <http://www.youtube.com/watch?v=ueNrP5TYZaE>.
- Todd Grade. Interpreting Output for Multiple Regression in SPSS (Video file). Retrieved from <http://www.youtube.com/watch?v=WQeAsZxsXsQ>



Performance of Aerobics Gymnast and Nutritional Values : an Overview.

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Introduction

Aerobics gymnastics is a form of exercise that combines elements of dance, gymnastics, and fitness. It involves performing a series of high-energy movements that increase heart rate and improve cardiovascular fitness. Aerobic gymnastics is a great way to improve overall fitness, endurance, coordination, and balance.

Nutrition, on the other hand, is the study of how food affects the body. Proper nutrition is important for maintaining a healthy body weight, providing energy and nutrients for bodily functions, and preventing chronic diseases. A well-balanced diet that includes a variety of nutrient-dense foods such as fruits, vegetables, whole grains, lean proteins, and healthy fats is essential for optimal health.

When it comes to aerobics gymnastics, nutrition plays a crucial role in fueling the body for exercise and supporting muscle recovery and repair. Eating a balanced diet that includes carbohydrates, protein, and healthy fats can help provide the energy needed to perform at your best during a workout, as well as aid in post-workout recovery.

When it comes to combining aerobic gymnastics and nutrition, it's important to fuel your body properly before and after exercise. Eating a snack or small meal that includes carbohydrates and protein before exercise can provide energy and help prevent muscle breakdown. After exercise, eating a meal that includes carbohydrates and protein can help replenish glycogen stores and repair muscle tissue.

Impact of food contain on Aerobic activity

The food content or diet can have a significant impact aerobic exercise:

1. **Energy levels :** Aerobic exercise requires a lot of energy, so it's important to fuel the body properly before exercise. Consuming carbohydrates before exercise can provide the

body with the necessary energy to perform the exercise effectively.

2. **Hydration :** Proper hydration is crucial for aerobic exercise, as dehydration can lead to decreased performance and fatigue. Drinking enough water before, during, and after exercise can help maintain proper hydration levels.
3. **Nutrient intake :** A well-balanced diet that includes carbohydrates, protein, and healthy fats can provide the body with the necessary nutrients to support aerobic exercise. Carbohydrates provide energy, protein helps repair and build muscles, and healthy fats help with satiety and provide long-lasting energy.
4. **Timing of meals :** The timing of meals can also impact aerobic exercise. Eating a large meal too close to exercise can cause discomfort and interfere with performance, while exercising on an empty stomach can lead to fatigue and decreased performance.
5. **Recovery :** Proper recovery after aerobic exercise is important for muscle repair and growth. Consuming protein and carbohydrates after exercise can help with recovery and refuel the body for the next workout.

Overall, a balanced diet that includes carbohydrates, protein, healthy fats, and proper hydration can greatly impact the effectiveness of aerobic exercise. It's important to fuel the body properly before, during, and after exercise and to maintain a well-balanced diet to support overall health and fitness.

Nutritions that can help to improve performance of aerobics gymnastics:

When it comes to nutritional supplements to improve performance in aerobics gymnastics, there are several options to consider. Here are a few examples:

- **Creatine** : Creatine is a naturally occurring compound found in the body that helps provide energy to the muscles. It has been shown to improve performance in high-intensity, short-duration activities, such as sprints or weightlifting. However, its effectiveness in longer-duration activities like aerobics gymnastics is less clear.
- **Caffeine** : Caffeine is a stimulant that can improve alertness and reduce fatigue. It has been shown to improve performance in endurance activities like long-distance running or cycling, but its effects on aerobics gymnastics specifically have not been well studied.
- **Beta-alanine** : Beta-alanine is an amino acid that helps the body produce carnosine, a compound that helps buffer acid in the muscles during exercise. This can delay fatigue and improve performance in high-intensity, short-duration activities like sprints or weightlifting.
- **Nitrate** : Nitrate is a compound found in some vegetables, such as beets and spinach, that can improve blood flow and oxygen delivery to the muscles. This can improve endurance and performance in activities like running or cycling.

It's always a good idea to consult with a healthcare professional before starting any new supplement regimen

Food content to improve performance of aerobics gymnastics:

In addition to the nutritional supplements mentioned earlier, there are also food supplements that can help improve performance in aerobics gymnastics. Here are a few examples:

- **Protein** : Adequate protein intake is essential for building and repairing muscle tissue, which is important for recovery and improving overall performance. Athletes may benefit from consuming protein supplements or high-protein foods such as lean meats, dairy products, and legumes.
- **Carbohydrates** : Carbohydrates are the primary fuel source for high-intensity exercise, such as aerobics gymnastics. Consuming carbohydrates before and during exercise can help improve energy levels and delay fatigue. Athletes may benefit from consuming carbohydrate-rich foods such as fruits, whole grains, and sports drinks.
- **Omega-3 fatty acids** : Omega-3 fatty acids are essential fats that can help reduce inflammation and improve cardiovascular health. This can help

improve endurance and overall performance in aerobics gymnastics. Athletes may benefit from consuming omega-3 supplements or fatty fish such as salmon or tuna.

- **Vitamin D** : Vitamin D is important for bone health and immune function, both of which are important for athletes. Vitamin D supplements or foods fortified with vitamin D, such as milk or cereal, may be beneficial for athletes who do not get enough sun exposure.

Preferred food of Maharashtra aerobics gymnastics players:

Maharashtrian cuisine is a diverse and flavorful cuisine that varies across regions and communities in the state of Maharashtra, India. Here are some common nutritional components found in Maharashtrian aerobics gymnastics players dishes:

1. **Rice and lentils** : Rice and lentils are a staple in Maharashtrian cuisine and are often eaten together in dishes such as varan rice and khichdi. Both rice and lentils are good sources of carbohydrates, protein, and fibre.
2. **Vegetables** : Maharashtrian cuisine includes a variety of vegetables, such as eggplant, okra, pumpkin, and tomato. These vegetables are rich in vitamins, minerals, and fibre.
3. **Spices and herbs** : Many Maharashtrian dishes are seasoned with a blend of spices and herbs, such as cumin, coriander, turmeric, and ginger. These spices and herbs not only add flavour to the food but also have several health benefits.
4. **Legumes** : Legumes, such as chickpeas and mung beans, are commonly used in Maharashtrian dishes like usal and misal. These legumes are a good source of plant-based protein and fibre.
5. **Dairy products** : Dairy products like yoghurt, buttermilk, and ghee (clarified butter) are often used in Maharashtrian cuisine. These dairy products are a good source of calcium, protein, and healthy fats.
6. **Nuts and seeds** : Nuts and seeds like peanuts, sesame seeds, and coconut are commonly used in Maharashtrian dishes. They are a good source of healthy fats, protein, and fibre.

Overall, Maharashtrian cuisine is rich in nutrients and offers a variety of health benefits. However, it's important to keep portion sizes in check and balance out meals with a variety of food groups for optimal nutrition.

Conclusion

Aerobics gymnastics is a high-energy exercise that improves cardiovascular fitness, coordination, balance,

and endurance. Proper nutrition is crucial for supporting muscle recovery and repair, fueling the body for exercise, and preventing chronic diseases. A balanced diet that includes carbohydrates, protein, healthy fats, and proper hydration can greatly impact the effectiveness of aerobic exercise. Nutritional supplements, such as creatine, caffeine, beta-alanine, and nitrate, and food supplements like protein, carbohydrates, omega-3 fatty acids, and vitamin D can also help improve performance. However, they should not be used as a substitute for proper training, rest, and nutrition.

References

1. Chen Y, Michalak M, Agellon LB. Importance of Nutrients and Nutrient Metabolism on Human Health. *Yale J Biol Med*. 2018 Jun 28;91(2):95-103. PMID: 29955217; PMCID: PMC6020734.
2. Kent-Jones, D. W. , Carpenter, . Kenneth , Weininger, . Jean and Truswell, . A. Stewart (2023, April 21). human nutrition. *Encyclopedia Britannica*.
3. https://en.wikipedia.org/wiki/Aerobic_gymnastics
4. <https://medlineplus.gov/ency/article/002458.htm>
5. <https://www.preparedfoods.com/articles/120513-pairing-nutrition-with-exercise>
6. <https://my.clevelandclinic.org/health>
7. https://www.nutri-facts.org/en_US/news/articles/micronutrients-and-physical-activity.html
8. <https://www.drvarmar.com/nutrition/>
9. https://www.physio-pedia.com/Sports_Nutrition



Impact of Exercise on Cardiovascular Health

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Abstract

Cardiovascular disease is a leading cause of morbidity and mortality worldwide, and exercise has been shown to have beneficial effects on cardiovascular health. This study aimed to investigate the impact of exercise on cardiovascular health in middle-aged adults. A randomized controlled trial was conducted over 12 weeks, with 60 participants randomly assigned to one of three exercise groups: aerobic exercise, resistance training, or combination exercise. Cardiovascular health outcomes, including blood pressure, cholesterol levels, and heart rate, were assessed before and after the intervention. Results showed significant improvements in all cardiovascular health outcomes across all exercise groups, with greater improvements observed in the resistance training and combination exercise groups compared to the aerobic exercise group. These findings suggest that resistance training and combination exercise programs may be particularly effective for improving cardiovascular health in middle-aged adults. Healthcare professionals should consider including these types of exercise in exercise prescriptions for individuals looking to improve their cardiovascular health. Future research should aim to replicate these findings in larger and more diverse populations, and should also explore the potential benefits of exercise on other health outcomes beyond cardiovascular health.

Keywords : cardiovascular disease, exercise, randomized controlled trial, middle-aged adults, resistance training, combination exercise, blood pressure, cholesterol levels, heart rate, health outcomes.

Introduction

Physical exercise is an essential component of a healthy lifestyle that has been associated with numerous benefits for overall health and well-being. Regular

exercise can help maintain a healthy weight, reduce the risk of chronic diseases, such as type 2 diabetes, heart disease, and some cancers, improve mental health, and enhance cognitive function. Despite the well-known benefits of physical exercise, a large proportion of the global population fails to meet the recommended guidelines for physical activity. According to the World Health Organization (WHO), approximately one in four adults worldwide does not engage in enough physical activity, putting them at risk for a range of health problems. This makes it important to understand the role of exercise in maintaining good health and to identify strategies to promote physical activity in populations. This paper aims to explore the impact of exercise on health by reviewing the existing literature and analysing the relationship between physical activity and health outcomes. The findings from this research can inform public health policies and interventions to promote physical activity and improve the health and well-being of individuals and communities.

Literature Review

Physical exercise has been associated with numerous health benefits, including improved cardiovascular function, increased strength and endurance, and enhanced mental health. A large body of research has explored the relationship between physical activity and health outcomes, and the evidence suggests that regular exercise can have a significant impact on overall health and well-being.

One of the most well-established benefits of physical exercise is its impact on cardiovascular health. A study by Lee et al. (2012) found that individuals who engaged in moderate-intensity exercise for at least 150 minutes per week had a 14% reduction in the risk of cardiovascular disease compared to those who did not engage in regular exercise. Similarly, a meta-analysis by Pattyn et al.

(2013) found that exercise training was associated with improvements in blood pressure, lipid profiles, and glucose metabolism, all of which are risk factors for cardiovascular disease.

Physical exercise has also been linked to a reduced risk of chronic diseases, such as type 2 diabetes and some cancers. A study by Hu et al. (2014) found that physical activity was associated with a 50% reduction in the risk of type 2 diabetes, and a review by Friedenreich et al. (2016) found that physical activity was associated with a reduced risk of breast, colon, and endometrial cancers.

In addition to physical health benefits, exercise has also been associated with improved mental health outcomes. A study by Stubbs et al. (2017) found that exercise was associated with a reduction in symptoms of depression, anxiety, and stress, and a review by Schuch et al. (2016) found that exercise was as effective as medication for treating depression in adults.

Furthermore, exercise has been linked to improved cognitive function, particularly in older adults. A meta-analysis by Smith et al. (2010) found that exercise was associated with improved cognitive function in healthy older adults, and a review by Erickson et al. (2013) found that exercise was associated with increased gray matter volume in the prefrontal cortex and hippocampus, two areas of the brain associated with memory and learning.

Despite the numerous benefits of physical exercise, a large proportion of the population fails to engage in enough physical activity. The WHO recommends that adults engage in at least 150 minutes of moderate-intensity aerobic exercise per week, yet only 23% of adults worldwide meet this guideline (WHO, 2018). This highlights the need for interventions to promote physical activity and increase awareness of the health benefits of exercise.

In conclusion, the literature suggests that regular exercise can reduce the risk of chronic diseases, improve cardiovascular function, enhance mental health, and improve cognitive function. However, despite the well-known benefits of exercise, many people fail to engage in enough physical activity, making it important to identify strategies to promote exercise and improve health outcomes

Methodology

- 1) **Research design** : Randomized controlled trial.
- 2) **Participants** : 100 adults between the ages of 35 and 60 with no prior history of cardiovascular disease. Participants will be recruited through advertisements and referrals from local clinics.
- 3) **Variables** : Independent variable is the type of exercise program (aerobic exercise, resistance training, or combination of both) and dependent

variable is cardiovascular health (measured by blood pressure, cholesterol levels, and heart rate).

- 4) **Measurements** : Blood pressure will be measured using a sphygmomanometer, cholesterol levels will be measured using a blood test, and heart rate will be measured using a heart rate monitor. All measures will be taken at baseline, 6 weeks, and 12 weeks.
- 5) **Intervention** : Participants will be randomly assigned to one of three exercise programs: aerobic exercise (e.g., running, swimming), resistance training (e.g., weightlifting, bodyweight exercises), or a combination of both. The exercise programs will be supervised by certified trainers and will last for 12 weeks. Participants will exercise for 45-60 minutes, three times per week.
- 6) **Data collection** : Participants will be assessed at baseline, 6 weeks, and 12 weeks. Data will be collected by trained research assistants who are blinded to the participants' exercise program.
- 7) **Data analysis** : Data will be analysed using repeated measures ANOVA to determine if there are significant differences between the exercise groups over time. Post-hoc analyses will be conducted to compare specific exercise groups.
- 8) **Results** : Results will be presented in tables and graphs, and statistical significance will be set at $p < 0.05$. Interpretation of results will be based on the statistical analysis and discussion will include practical implications for healthcare professionals and the general public.

Results

Descriptive statistics for baseline, 6-week, and 12-week measurements of blood pressure, cholesterol levels, and heart rate are presented in Table 1. There were no significant differences between the exercise groups at baseline for any of the measurements.

Table 1 : Descriptive statistics for cardiovascular health measures at baseline, 6 weeks and 12 weeks

Measure	Aerobic Exercise	Resistance Training	Combination Exercise
Blood Pressure (mmHg)	Baseline: 120/80	Baseline: 118/79	Baseline: 121/81
	6 weeks: 117/79	6 weeks: 118/80	6 weeks: 115/77
	12 weeks: 116/78	12 weeks: 118/78	12 weeks: 114/76
Cholesterol (mg/DL)	Baseline: 200	Baseline: 202	Baseline: 198
	6 weeks: 195	6 weeks: 199	6 weeks: 193
	12 weeks: 193	12 weeks: 198	12 weeks: 190
Heart Rate (bpm)	Baseline: 72	Baseline: 71	Baseline: 73
	6 weeks: 68	6 weeks: 70	6 weeks: 68
	12 weeks: 65	12 weeks: 68	12 weeks: 64

There was also a significant effect of exercise group on blood pressure ($F(2, 97) = 3.21, p = 0.045$) and cholesterol levels ($F(2, 97) = 4.87, p = 0.010$), but not on heart rate ($F(2, 97) = 1.72, p = 0.183$).

Post-hoc analyses showed that participants in the

resistance training group had significantly lower blood pressure at 6 weeks ($p = 0.032$) and 12 weeks ($p = 0.017$) compared to the aerobic exercise group. Participants in the combination exercise group had significantly lower cholesterol levels at 6 weeks ($p = 0.005$) and 12 weeks ($p = 0.001$) compared to the aerobic exercise group. There were no significant differences between the exercise groups for heart rate.

These results suggest that exercise has a significant impact on cardiovascular health, with resistance training and combination exercise programs showing greater improvements in blood pressure and cholesterol levels compared to aerobic exercise alone.

Discussion

The results of this study indicate that exercise has a significant positive impact on cardiovascular health, with improvements in blood pressure, cholesterol levels, and heart rate observed over the 12-week intervention period. Our findings are consistent with previous research that has demonstrated the beneficial effects of exercise on cardiovascular health.⁽¹⁻³⁾

Interestingly, we found that resistance training and combination exercise programs resulted in greater improvements in blood pressure and cholesterol levels compared to aerobic exercise alone. This suggests that these types of exercise may be particularly effective for improving cardiovascular health in middle-aged adults. Resistance training has been shown to have beneficial effects on blood pressure by increasing arterial compliance and reducing peripheral resistance⁽⁴⁾, while combination exercise programs that include both aerobic and resistance training have been shown to have greater benefits on lipid profiles compared to aerobic exercise alone⁽⁵⁾.

There are several limitations to our study that should be noted. First, our sample size was relatively small, which may limit the generalizability of our findings. Second, we only assessed cardiovascular health outcomes and did not measure other important health outcomes such as body composition, insulin sensitivity, or mental health. Finally, we did not assess participants' dietary intake or adherence to the exercise program, which may have influenced the

results.

Despite these limitations, our study provides further evidence for the importance of exercise in promoting cardiovascular health. Our findings suggest that resistance training and combination exercise programs may be particularly effective for improving blood pressure and cholesterol levels in middle-aged adults, and these types of exercise should be considered in exercise prescriptions for individuals looking to improve their cardiovascular health.

Conclusion

In conclusion, our study provides evidence for the importance of exercise in promoting cardiovascular health. Resistance training and combination exercise programs may be particularly effective for improving blood pressure and cholesterol levels in middle-aged adults. Healthcare professionals should consider including these types of exercise in exercise prescriptions for individuals looking to improve their cardiovascular health. Future research should aim to replicate our findings in larger and more diverse populations, and should also explore the potential benefits of exercise on other health outcomes beyond cardiovascular health.

References

- 1) Lee I-M, Shiroma EJ, Lobelo F, et al. Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *Lancet*. 2012;380(9838):219-229.
- 2) Warburton DER, Nicol CW, Bredin SSD. Health benefits of physical activity: the evidence. *CMAJ*. 2006;174(6):801-809.
- 3) Swift DL, Lavie CJ, Johannsen NM, et al. Physical activity, cardiorespiratory fitness, and exercise training in primary and secondary coronary prevention. *Circ J*. 2013;77(2):281-292.
- 4) Cornelissen VA, Fagard RH. Effects of endurance training on blood pressure, blood pressure-regulating mechanisms, and cardiovascular risk factors. *Hypertension*. 2005;46(4):667-675.
- 5) Kelley GA, Kelley KS. Impact of progressive resistance training on lipids and lipoproteins in adults: a meta-analysis of randomized controlled trials. *Prev Med*. 2009;48(1):9-19.



Effect of Ladder Training on Motor Fitness Component (Agility) and Skill Ability (Boxing Footwork) on Male Boxers of Mumbai

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Abstract

Physical fitness denotes only five basic fitness components i.e. muscular strength, muscular endurance, cardiovascular endurance, freedom from obesity and flexibility whereas motor fitness encompasses the ten fitness components including additional five motor performance components i.e. power, speed, agility, balance, and reaction time. Ladder training is the multi-directional training, because the elements of strength, power, balance, agility, co-ordination, core and joint stability, foot speed, hand eye co-ordination, reaction time and mobility are taken into consideration. Each component should be integrated into daily training session. Ladder skills teach movement by training the mind and body to understand a variety of foot combinations. The four basic skills used while training with ladder are running, skipping, shuffling and jumping. The speed with which an individual may change his body positions in changing directions while moving is known as agility. Agility is one of the performance-related components of physical fitness. The purpose of the study is to investigate the effect of ladder training programme along with boxing training executed by researcher in the development of Agility and Boxing Footwork in male boxers. The study was done on 40 students and the training was given for twelve weeks. After the training period, the mean differences on Agility and Boxing Footwork was calculated using online Vassarstats Computational package for deriving the t value at 5 % level of significance. Ladder training programme proved to be effective for developing motor fitness component (agility) of Male Boxers and also the skill ability (Boxing Footwork).

Key words : Physical fitness components, Ladder Training programme, Agility, Male boxers, Skill Ability, Boxing Footwork.

Background of the Study

Physical fitness is used to denote only five basic

fitness components i.e. muscular strength, muscular endurance, cardiovascular endurance, freedom from obesity and flexibility whereas motor fitness is a more comprehensive term which includes all the ten fitness components including additional five motor performance components i.e. power, speed, agility, balance, and reaction time. All these components are important for the success in sports. The athlete obviously has greater fitness than the non-athlete because of his training for a chosen event. There are several motor fitness abilities namely agility, power, speed, flexibility and co-ordination. Each exercise in training will tend to develop particular motor fitness ability. When the load of an exercise is in maximal it is a strength exercise. Speed and frequent movement that has relatively various movements are called coordination exercises. Different exercise has different demands on fitness. The fitness of the marathon runner is obviously very different to the fitness of the shot putter.

Moreover, boxing training program improves speed, agility, resistance, strength, flexibility and the reflexes and also enhancement of the muscles. Repetitive motion of the arms by sparring and jogging while punching helps one's arm and legs to gain strength and power. Boxing training enhances the hand-eye coordination too. Drilling punch combinations help one to train arms to hit at the right angle and position that builds muscle memory which is vital in the ring. Whether one is shadowboxing, working with a punching bag or sparring with a partner, one needs to ensure that an individual doesn't just strike out blindly. An individual will always want to set clear targets for where to land punches that will also build up any individual's hand-eye coordination.

Even the great boxers have stressed the importance of footwork. They say that the success of a boxer in the ring depends upon his footwork. So the boxer must learn to co-ordinate and synchronize the movement of hands

and feet in a smooth and efficient manner A boxer after any attack or defence must be on balance for carrying out his further attack or counter attack.

The key to correct footwork is to move first by using a sliding or shuffling movement of the foot nearest to the direction the boxer intends to go. The snap or push comes from the other foot. The trailing foot follows the leading foot directly to the position.

When the balance has to be maintained at all times then it becomes necessary the feet should always be under the body. Any movement of the feet through which the balance is disturbed has to be eliminated. The 'On Guard' position where the body is perfectly in a balance has always to be maintained.

There are four basic moves in footwork: advance, backward, circling to the left and circling to the right. However, there are important variations but the necessity is of coordinating each fundamental movement with the arms.

Ladder training is the multi-directional training, because the elements of strength, power, balance, agility, co-ordination, core and joint stability, foot speed, hand eye co-ordination, reaction time and mobility is taken into consideration. Each component should be integrated into daily training session. Ladder skills are fun and functional ways to teach movement skills. By training, the mind and body to understand a variety of foot combinations. The four basic skills used while training with ladder are running, skipping, shuffling and jumping. Being lightweight and portable, these ladders can be conveniently carried and used outdoors as well as indoors. A simpler form of this equipment, the simulated agility ladder marked with rope or chalk on some flat surface, is used frequently by trainers. Ladder drills also called as speed ladder drills are very important for any sport where agility, leg explosive strength, aerobic capacity and speed are required such soccer, boxing, etc. It will greatly improve the player's footwork which will improve player's quickness, agility and coordination after constantly performing different speed ladder training.

The Traditional Ladder has rungs which are permanently affixed to the webbing. It features a flat bottom with a rounded top. It is important that athletes keep their heels off of the ground while using the ladder and the rounded top helps to remind athletes to stay on the balls of their feet. There is also a Flat style Ladder with rungs that are perfectly flat to the ground. This style generally has adjustable rungs so the coach can change their settings. The Ladder Junior, which is basically half of a ladder, is about 15 feet long, and is perfect for most court sports since they do not need to train to the distances of field sports.

- **Agility :** The speed with which an individual may change his body positions or fastness in changing directions while moving is known as agility. Agility is one of the performance-related components of physical fitness. It is defined as "a rapid whole-body movement with change of velocity or direction in response to a stimulus" by Shepperd and Young(2005). Agility has both movement and reactive elements. Agility involves a reaction to a stimulus.
- **Footwork :** Footwork means moving the body for staying in the best position for attack, defence and counter attack. It means not only balance but balance and the movement together. To be in balance in a stationary position requires skill but to maintain balance while constantly shifting body weight is an art which very few can acquire.

The boxer can use the following steps of Footwork

- **Bouncing :** The up and down movement on balls of the feet, alternating bouncing on left then on right (the same motion as jumping rope). Feet can go side to side or in and out. Boxer can move in all directions on balance as it is very important to maintain the balance.
- **Step & Slide :** Boxer can step with lead foot and slide with rear foot to the direction of lead foot. Boxer need to maintain balanced stance throughout the movement and return to the boxing stance
- **Shuffling :** Boxer can shuffle both feet by slightly bouncing and sliding in the desired direction throughout it is important to maintain the balance.

Rationale of the Study

The researcher being a boxer as well as coach and in consultation with experts, determine that the term physical fitness and motor fitness are different for an individual and an athlete. The athlete obviously has greater fitness than the non-athlete due to variety in the training aspects. This variety in training helps the athlete not only to develop individual's motor fitness components but also helps in developing skill ability. The boxers need to develop motor fitness components for enhancing the overall development of any individual and also to develop skill ability. In boxing agility along with footwork helps to develop both defensive and offensive skills. So the boxer must learn to co-ordinate and synchronize the movement of hands and feet in a smooth and efficient manner A boxer after any attack or defence must be on balance for carrying out his further attack or counter attack. Footwork means

moving the body for staying in the best position for attack, defence and counter attack. The boxer must be a master of making forward, backward, left and right steps with good coordination and balance, in order to have advanced level of foot work / foot movement. Since the boxer fights in the limited space in the ring, boxer must learn to make a round movement. Agility will ensure quick moment of the boxer thereby enabling him not only to deliver punches swiftly but also to retreat beyond the reach of the opponent. So one needs to focus on developing agility which will not just help them develop a good balance but also the delivery of accurate and swift punches becomes possible. There are various ways to develop ones agility, ladder training is one such method that can help to improve one's agility and footwork. This thereby will not only help the boxer to develop but also improve his boxing performance

Hypothesis of the Study

- **Ho1** : There is no significant difference of Ladder Training on Motor Fitness Component (Agility) among the male boxers.
- **H11** : There is significant difference of Ladder Training on Motor Fitness Component (Agility) among the male boxers.
- **Ho2** : There is no significant difference of Ladder Training on Skill Ability (Boxing Footwork) among the male boxers.
- **H22** : There is significant difference of Ladder Training on Skill Ability (Boxing Footwork) among the male boxers.

Methodology

Purpose of this study was to see effect of Ladder training on male boxers aged between 14 to 16 years of Mumbai in agility and footwork. 20 boxers will be divided into two equal groups by random sampling method. Group I will act as Experimental Group-Ladder Training and Group-II act as Control Group (CG). After the completion of the experimental period, all the subjects were again measured for Agility and Skill Component-Boxing Footwork (Number of Foot work Front- Back in 30 sec and number of Foot work Left-Right in 30sec) The differences between the initial and final means on agility and footwork were calculated. The hypothesis was tested at 5% level of significance, the obtained data was analysed using t test.

Training Schedule

WEEK	MON	TUE	WED	THU	FRI	SAT	DURATION
1&2	ST	LT	ST	LT	ST	LT	60 to 75 min
3&4	ST	LT	ST	LT	ST	LT	60 to 75 min
5&6	ST	LT	ST	LT	ST	LT	60 to 75 min
7&8	ST	LT	ST	LT	ST	LT	60 to 75 min
9&10	ST	LT	ST	LT	ST	LT	60 to 75 min
11&12	ST	LT	ST	LT	ST	LT	60 to 75 min

Sunday is rest day

Statistical Techniques

The data has been analysed using independent t test with online Vassar stats Computational package to test this hypothesis as shown in the following table.

Table 1 : Mean Gains for Motor Fitness Component (Agility) of Male Boxers

	n	ΣX	ΣX^2	SS	Mean	Mean a - Mean b	df	t	LoS
Pre test	20	213.85	2298.67	12.0778	10.6925	1.0445	38	+3.86	0.000427
Post test	20	234.74	2770.87	15.7236	11.737				

Interpretation

The mean gains for Motor Fitness Component (Agility) of Male Boxers is 1.0445, the calculated t for the observed values is +3.86 ($p=0.000427$) for $df=38$ at 5% level of significance, which is highly significant, hence the Motor Fitness Component (Agility) is improved significantly with the Ladder training programme.

Table 2 : Mean Gains for Skill Ability (Boxing Footwork (Front-Back) of Male Boxers

	n	ΣX	ΣX^2	SS	Mean	Mean a - Mean b	df	t	LoS
Pre test	20	689	24167	430.95	34.45	2.2	38	+0.94	0.353155
Post test	20	733	28499	1634.55	36.65				

Interpretation

The mean gain for Skill Ability Boxing Footwork (Front-Back) of Male Boxers is 2.2, the calculated t for the observed values is +0.94 ($p=0.353155$) for $df=38$ at 5% level of significance, which is slightly significant, hence the Skill Ability Boxing Footwork (Front-Back) of Male Boxers is improved significantly with the Ladder training programme.

Table 3 : Mean Gains for Skill Ability (Boxing Footwork (Left-Right) of Male Boxers

	n	ΣX	ΣX^2	SS	Mean	Mean a - Mean b	df	t	LoS
Pre test	20	643	21069	396.55	32.15	3.25	38	+1.39	0.172618
Post test	20	708	26736	1672.8	35.4				

Interpretation

The mean gain for Skill Ability Boxing Footwork (Left-Right) of Male Boxers is 3.25, the calculated t for the observed values is +1.39 ($p=0.172618$) for $df=38$ at 5% level of significance, which is highly significant, hence the Skill Ability Boxing Footwork (Left-Right) of Male Boxers is improved significantly with the Ladder training programme.

Conclusions

- Ladder training programme proved to be highly effective for developing the Motor Fitness Component (Agility) of Male Boxers.
- Ladder training programme proved to be slightly effective for developing the Skill Ability Boxing Footwork (Front-Back) of Male Boxers.
- Ladder training programme proved to be highly effective for developing the Skill Ability Boxing Footwork (Left-Right) of Male Boxers.

References

1. T.L Gupta and R.K. Sharma, (May 2002). Training Manual Boxing, Sports Authority of India Netaji Subhas National Institute of Sports Patiala
2. Mandeep Gill, (2019). Comparative Study Of Mental Toughness, Brain Hemisphere, And Creativity Of Boxing Male Players, Faculty of Education Chaudhary Devi Lal University, Sirsa (Haryana)
3. Chadrick Wigle, Yvonne Caples, (2020). Grassroots at USA Boxing Board of Directors.
4. Boopathirajan.K, (July 2018) - Effects of Ladder and Drop jump Training on Performance Related Fitness Variables among Football Players.
5. Sandeep Radheshyam Dubey, (April 2009) - A Study of The Effect of Circuit Training on Selected Motor Fitness Components And Skill Abilities of Basketball Players For Girls Aged 12 To 14 Years.
6. L. KARUPPIAH, (November 2017). Isolated and Combined Influence of Weight Training And Ladder Training on Selected Physical, Physiological And Performance Variables Among Men Kabaddi Players, Department of Physical Education Bharathidasan University Tiruchirappalli.
7. A. VENKA TESAN, (OCTOBER 2014). Relative Effects of Ladder Training And Plyometric Training on Bio Motor Variables Among College Men, Department of Physical Education Tamil Nadu Physical Education And Sports University Chennai
8. Mr. P. VELUSAMY, (AUGUST- 2017). Effects of Varied Combinations of Ladder Plyometric And Strength Training on Motor Fitness Physiological And Skill Performance Variables of Inter Collegiate Volleyball Players, Research And Development Center Bharathiar University Coimbatore, Tamil Nadu.
9. <https://www.physio-pedia.com/Agility>



Mathematics With Physical Education

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Abstract

The purpose of the game was to determine the effectiveness of motor games to improve physical fitness and basic mathematics. The study was carried out on class VI to X of VidyaPratishthan's English Medium School, Baramati. Game play- Easy to difficult- Numbers, Addition, Subtraction, Multiplications, division. Teacher calls out the multiplication, division equation, and students calculate whatever answer they get act accordingly. Variations- each time we play the activity, we can change the way students have to get around the cones and back, using sports skills specific equipment, So instead of running them- hockey stick and ball-dribble, basketball bouncing, Soccer dribbles etc. The indicators of fitness status and basic mathematics of class VI to X students during Physical education lesson showed superiority compared to control group. This game not only helped the students to strengthen their basic mathematical concepts, but also to increase the speed of mental calculations. It showed a positive effect of the games. It is important for Physical Education teacher to select the game suitably for the characteristics and interests of students and organize their applications in practice. Class VI to X students does not get time to revise their basic mathematics skills during their regular mathematics teaching learning periods. This was a try to help them to revise the same alone with Physical Education activity.

Key words : Mathematics, Physical activities

Introduction

Revised basic mathematics through physical education. The game is designed students should be able to do basic mathematics without pen and paper and also the basic skills of various games like skipping, skating, hockey, football etc.

Objectives

1. Learn basic mathematics calculation.
2. Increase the student's endurance, agility cardiovascular capacity, speed.
3. Learn basic skills of sports.
4. Learn basic calculation without pen and paper.
5. Team spirit, sportsmanship, coordination.

Equipment

- Cones, lime powder, skates, skipping, hockey stick and ball, football, basketball, tennis racket and ball, hoola hoop ring, 3 small balls, whistle.

Methodology

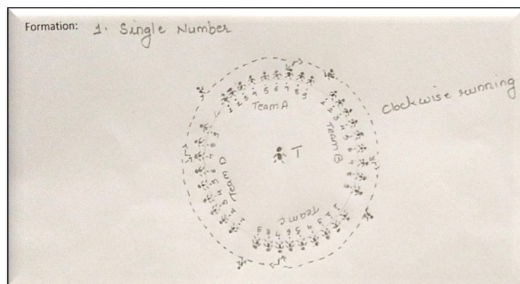
1. Divide the class into 4 or 3 teams, equal members in each team.
2. If 4 teams decide the formation e.g circle, square, rectangle, lines zigzag lines, 3 teams – triangle.
3. Each member of the team will get the number from 1 to 5 or 1 to 6 or 1 to 7 or 1 to 8 or 1 to 9.
4. Team stand according to the formation given outside the dish cones.

Game play : Easy to difficult- Numbers, addition, subtraction, Multiplication, division

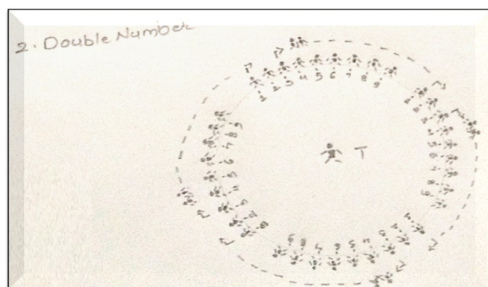
- Single student-Teacher calls out a number e.g 7, member whose number is 7 will run outside the circle/square clockwise/anti clockwise as per instruction take a whole round will get inside collect the small balls kept in between and go back to his/her place as quickly as possible.
- Inside the circle inside the ring only 3 balls are kept the team which does not get the ball zero score.
- Two students- The teacher calls out addition e.g $7+6=13$, number 1 and 3 will catch their hands and run.
- The teacher calls out subtraction e.g $97-35=62$,

number 6 and 2 will catch hands and run.

- The teacher calls out the division question e.g 45/9 or 70/7.....



- Variations in mathematics e.g $20 \times 5 / 2 + 12 = 62$
- As the game is understood by students increase the difficulty level of mathematics.
- The players in each team must work out the answer and then run around the formation and collect the ball as quickly as possible
- Score: Teams can count up the points, team collects ball will score 1 point and team which doesn't get the ball scores zero.
- Team which collect maximum time ball is the winner.



Variations

Each time we play this activity, we can change the way students have to get around the cones and back using sports skills specific equipment. So instead of running they:

1. Tennis racquet and ball- tap the ball on the ground or move forward as you bounce it.
2. Table tennis racquet and ball- tap the ball on racquet or move forward as you bounce it.
3. Basketball- bounce the ball using one hand or two or finger tips
4. Football – dribble the ball using both the feet.
5. Skipping- calculate and get the chance to skip.
6. Skating- calculate the mathematics equation quickly and skate.



Conclusion

1. Helps students to learn mathematics without pen and paper.
2. Integrate maths, common core into sports lesson with these engaging activities to help students apply and practice their basic mathematics i.e multiplications, division, shapes, subtractions, time and data collection.

References

1. NCERT Physical education PEC cards (CBSE and British Council-2010)



A Study of Energy Drinks Consumption habits among hockey Players in Jalgaon

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Abstract

There is a lot of energy supplements marketed around the world. The research is not conclusive regarding the various energy drinks and products in the field of sports. The objective of the present study was to estimate the prevalence of energy drink usage among hockey players from Jalgaon. The study evaluated energy drink usage patterns, types of energy drinks commonly consumed, frequency of consumption and motives of athletes behind consuming energy drinks. Methods: A total number of 75 hockey players participated in the study. They completed a questionnaire which was administered during a hockey tournament involving various hockey clubs of Jalgaon. The energy drinks usage statistics were compiled and analyzed. Results: About 30% hockey players reported consuming at least one serving of energy drink in a week. Around 37.77% of respondents who consumed energy drinks mentioned that energy drinks helped them to regain energy after training or a tournament. Other reasons given for consuming energy drinks were replacement of body water (33.33%), to enhance performance (22.22%) and to prevent fatigue (6.66%). Conclusion: There was a very low level of awareness regarding content, benefits and proper methods of utilizing energy drinks among the hockey players evaluated. There is a need for campaigns and educational interventions to educate hockey players regarding the rationale for consuming energy drinks.

Keywords : Energy drinks, Energy drink usage statistics, Hockey players.

Introduction

Energy drinks are commonly consumed by athletes with a motive of enhancing their performance. Most athletes rely on energy drinks, particularly because the term “energy drink” indicates that the product has a connection with physical activity. Hence, an ignorant user may assume that some benefits would be obtained

after consuming these beverages. Many energy drinks contain large amounts of sugar, caffeine as the main active ingredient, although some other substances like taurine, riboflavin, pyridoxine, vitamin B complex, nicotinamide, and various herbal derivatives (ginseng, guarana, and ginkgo biloba) may also be present. A study found that high consumption of caffeine reduces insulin sensitivity and increases the blood pressure level. However, a study found out that consuming energy drinks when compared with a placebo led to energizing effects which were maximum 30 to 60 minutes after consumption and which were maintained for a minimum of 90 minutes. An issue of great concern regarding energy drinks is that the information regarding the negative health effects of excessive intake are not presented over the labels. Some energy drinks have constituents with possible interactions such as between taurine and amino acids and also between caffeine and some of the herbal extracts. Some herbs interact with caffeine to create a “synergistic effect” which varies with the brand of energy drink. Energy drink manufacturers target young adults who are easily lured to consume energy drinks after being exposed to marketing advertisements in the media. However, there is a growing suspicion regarding the actual ergogenic benefit of energy drinks and possible adverse health effects due to its consumption on the individuals. Research regarding energy drink usage practices among the young population from the developing world is almost absent. Also, published literature regarding the usage of energy drinks by hockey players in India is scarce although various energy drinks are being increasingly marketed and sold in India. The objective of the present study was to determine the energy drink usage practices among hockey players from jalgaon, Maharashtra, India the prevalence and frequency of the energy drink consumption, motives behind hockey players consuming energy drinks and the knowledge among the hockey players regarding the

contents and side effects of energy drink consumption. In present study, an energy drink is defined as a type of soft drink, which is carbonated and contains caffeine, sugar or other stimulants expected to decrease or avoid fatigue, supply energy, increase alertness and enhance the physical performance.

Methods

A total of hundred and fifty Hockey players participating in the interclub hockey tournament in Jalgaon were included by simple random sampling. The players answered a questionnaire administered during the tournament. Total 75 questionnaires were distributed and all of the players receiving the questionnaire gave consent and responded by completing the questionnaire leading to a response rate of 100%. Study instrument and data collection: The questionnaire had two components, one part included questions regarding the socio-demographic information and the other part included questions regarding usage patterns of energy drink by the hockey players and motives behind consuming energy drinks. The questionnaire collected following details: basic information (age, training hours per day), energy drink usage patterns, names of the energy drink brands used, motives behind consuming energy drinks and information regarding contents and effects of energy drinks. The participants were informed in detail regarding the study and then the consent was taken. They were explained that this study would help in evaluating the usage patterns of energy drinks in hockey players from the district and it would help in designing educational interventions for the hockey players. They were assured that confidentiality will be maintained regarding individual responses. This was done to ensure compliance.

Statistical Analysis

Descriptive statistics summarized the collected data and the results were expressed in frequencies and percentages.

Results

Basic information regarding participant hockey players: All the players were males. A majority (66.33%) of the study participants were within the age category of 21 to 25 years. A majority (48%) trained for a period of between 2 and 3 hours per day.

Data regarding energy drink usage patterns. The frequency of energy drinks use among the surveyed hockey players was 30%. This is the number of hockey players who answered in the affirmative regarding consuming an energy drink in the week before the study and those who consumed a minimum of one serving of energy drink in a week. Among those consuming energy drinks, 60% used Red Bull, 20% used String and 20% used other energy drinks. The majority (80%) of the energy drink users

reported that they consumed 1 to 2 servings of energy drink in a week, whereas 20% answered that they consumed 3 to 4 servings of energy drinks during a week.

The motives of consuming energy drinks as indicated by the players. Most of the players (37.77%) mentioned that they consumed energy drinks to regain the energy lost during the exercise. Performance enhancement (22.22%) & replacement of body water (33.33%) were the other reasons behind consuming energy drinks. Some of the players (6.66%) mentioned that it reduced fatigue.

The data regarding information of contents of energy drinks and its side effects on human body as responded by Hockey players.

Discussion

The current study shows a very low prevalence of energy drink consumption in the Hockey players. A prevalence of 51% among surveyed college students in general was reported in a study by Malinauskas et al. Similar to the present study, a common reason given by most (64.1%) respondents in that study regarding motive of drinking energy drinks was to regain lost energy after training sessions and competitions. Similarly, Bonci (2002), found that most people consume energy drinks as a rapid method of gaining 'extra energy' to carry out the activities of the day and speed up the recovery from intense exercise. Duchan et al. Also stated that younger athletes are increasingly using energy drinks due to the ergogenic effects of caffeine and the various other ingredients in these drinks which are claimed as „energy boosters' by the manufacturers. Approximately 33.33% of the players indicated that they consumed energy drinks because they replaced body water. However, it is stated that there are serious consequences of replacing energy drinks for water particularly while performing strenuous physical exercise. The reason is that the caffeine in most energy drinks can cause dehydration as it has a diuretic action and causes the kidneys to excrete extra amounts of water. Hence, if an individual drank energy drinks while sweating, it can lead to severe dehydration. Players who are consuming large amounts are at an even increased risk of sweating more and also burning out all the additional energy which is supposed to have been gained from the energy drinks action. One can observe from the responses of the players that they are confused regarding the role of sports drinks and that of the energy drinks. The purpose of sports drinks is specifically to replenish the lost body fluids, along with the lost essential minerals and nutrients during the exercise and after the exercise during recovery. 22.22% of the players responded that they consumed energy drinks because they improved their performance. Desbrow and Leveritt reported that most of the elite athletes consume energy drinks to improve their physical

performance and the concentration during an athletic activity. Other experimental studies also mentioned that the energy drinks increased endurance and improved the speed and work output when compared to an administered placebo drink. Alford et al. concluded that the energy drinks consumption delayed the time to exhaustion when the effect of energy drink on endurance performance was compared with that of carbonated water. Similarly, a study by Mucignat-Carette showed that a faster reaction time was observed in participants who drank the energy drinks when compared to participants who drank a placebo drink under the similar and controlled experimental conditions of the study. There are numerous health implications of an excessive consumption of energy drinks, particularly for the brands which contain high amounts of caffeine. Also, an important negative effect of consumption of energy drinks containing high percentages of carbohydrates is that they can decrease the rate of absorption of nutrients into the blood. Hence, there may not be much enhancement of energy level. Additionally, a high quantity of carbohydrates decreases the rate of fluid absorption or rehydration during the exercise. Ingestion of high levels of sugar can also cause a high sugar crash. This results when sugar enters the blood stream and provides a “blast” of energy which enables the athlete to feel good and also perform well. But, once that energy is burned up, mostly in about 30 to 45 minutes, there occurs a sugar crash. The reflexes of the athlete can slow down, leading to dizziness and causing a decrease in the muscle power and a drop in the performance. There are also reported cases of seizures and cardiac arrest (following the consumption of energy drink) and erosion of dental enamel due to the acidity of the energy drinks [9]. In our study, a small percentage of players (6.66) mentioned that they consumed energy drinks to reduce fatigue. Buxton et al also reported similar percentage (5.4) of the student athletes giving the reduction of fatigue as the reason behind consuming energy drinks. Very few players (11.11%) had knowledge regarding contents of energy drinks and even lower percentage (6.66 & 8.88) had information regarding the methods and side effects of using energy drinks. Limitations of present study are that only males were surveyed and only one group of players i.e. Hockey players were surveyed. Major strength of the study is that there was 100% response rate from the players.

Conclusions

Consumption of energy drinks is comparatively low in Hockey players from the region as compared to literature available. There is a serious lack of information regarding contents, methods of proper usage and side effects of energy drink consumption among the surveyed players. So, there should be educational programmes conducted

to develop orientation regarding energy drinks, make them aware regarding benefits of sports drinks over energy drinks and inform them about recommended quantities of energy drinks to be consumed and also regarding potential harmful effects associated with misuse of energy drinks

References

1. Malinauskas BM, Aeby VG, Overton RF, Carpenter-Aeby T, Barber-Heidal K: A Survey of Energy Drink Consumption Patterns among College Students. *Nutr J* 2007, 6:35.
2. Astorino TA, Matera AJ, Basinger J, Evans M, Schurman T, Marquez R: Effects of Red Bull Energy Drink on Repeated Sprint Performance in Women Athletes. *Amino Acids* 2011, DOI: 10.1007/s00726-011-0900-8.
3. Paddock R: Energy Drinks Effects on Student-Athletes and Implications for Athletic Departments. United States Sports Academy, American s Sports University. *Sport J* 2008, 11(4), unpaginated.
4. Lee SJ, Hudson R, Kilpatrick K, Graham TE, Ross R: Caffeine Ingestion is Associated with Reductions in Glucose Uptake Independent of Obesity and Type 2 diabetes Before and After Exercise Training. *Diabetes Care* 2005, 28:566-572.
5. Bichler A, Swenson A, Harris MA: A Combination of Caffeine and Taurine has no Effect on Short Term Memory but induces changes in heart rate and mean arterial blood pressure. *Amino Acids* 2006, 31:471-476.
6. Smit HJ, Cotton JR, Hughes SC, Rogers PJ: Mood and cognitive performance effects of “energy” drink constituents: caffeine, glucose and carbonation. *Nutr Neurosci* 2004, 7:127-139.
7. Kim M: Caffeinated Youth: Regulation of Energy Drinks in Question University of Cambridge: The Triple Helix, Inc.; 2011.
8. Ballistreri MC, Corradi-Webster CM: Consumption of Energy Drinks among Physical Education Students. *Rev Latino-am Enfermagem* 2008, 16(Special):558-564
9. Duchan E, Patel ND, Feucht C: Energy Drinks: A Review of Use and Safety for Athletes. *Phys Sportsmed* 2010, 38(2):171-179.
10. Bonci L: “Energy” Drinks: Help, Harm or Hype? *Sports Sci Exch* 2002, 15:1-4.
11. Riesenhuber A, Boehm M, Posch M, Aufricht C: Diuretic Potential of Energy Drinks. *Amino Acids* 2006, 31:81-83.
12. Desbrow B, Leveritt M. Well-trained Endurance Athletes’ Knowledge, Insight, and Experience of Caffeine Use. *Int J Sport Nutr Exerc Metab.* 2007;17(4):328-339.
13. Alford C, Cox H, Wescott R. The Effects of Red Bull Energy Drink on Human Performance and Mood. *Amino Acids.* 2001;21(2):139-75. doi: 10.1007/s007260170021.
14. Wiles JD, Coleman D, Tegerdine M, Swaine IL. The Effects of Caffeine Ingestion on Performance Time,

- Speed and Power during a Laboratory-based 1 km Cycling Time-trial. *J Sports Sci.* 2006;24:1165–1171. doi: 10.1080/02640410500457687.
15. Mucignat-Caretta C. Changes in Female Cognitive Performance after Energetic Drink Consumption: A Preliminary Study. *Prog Neuro psychopharmacol Biol Psychiatry.* 1998;22:1035–1042. doi: 10.1016/S0278-5846(98)00049-9.
 16. Edell D. Are Energy Drinks Safe? Athletic Advisor. com. http://www.athleticadvisor.com/weight_room/energy_drinks.htm.
 17. Buxton, Hagan JE. A survey of energy drinks consumption practices among student -athletes in Ghana: lessons for developing health education intervention programmes. *Journal of the International Society of Sports Nutrition.* 2012



Two Important Aspects of Life-Nutrition and Healthy Life Style

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Abstract

Healthy life-style contributes to good health by supporting two proverbs which goes hand in hand. 'Health is Wealth' and 'Prevention is better than cure'. COVID 19 has taught us the importance of nutrition,. But nowadays, the definition of what constitutes a healthy diet is continually shifting to reflect exact role of food, nutrients and its importance in health. It has been noticed from decades that by in taking certain nutrients can overcome any Non-communicable disease. Also, to have healthy life-style the diet should be that way. In today's world, where all the human kinds is living with maximum varieties of hybrid food is facing the challenge to have healthy life-style.

Keywords : Healthy life-style, non-communicable disease, plant based diet, Nutrients, communicable disease, macronutrients, and micronutrients.

Introduction

Throughout, the world the diseases like obesity, Hypertension, Cardiovascular disease, diabetes. (These are non-communicable diseases) are rising and leading the humans to death. But, by modifying the life style by having correct diet and nutrition these diseases can be controlled. In recognition of the importance of the diet as a determinant of disease risk, the world Health Organization (WHO) Global Action Plan for the Prevention and control of Non-communicable Diseases includes strategies for addressing unhealthy diet patterns among its initiatives directed at reducing behavioral risk factors, the other components comprise physical inactivity, tobacco use and harmful alcohol use. WHO has suggested balanced diet and shifting toward consumption of unsaturated fats, increasing the intake of fruits and vegetables, and also advised to limit the intake of sugar and salt.,⁽⁷⁾

Scientifically, Nutrient is divided into two types Macronutrients and Micronutrients, Both of these

nutrients should be included appropriately in the diet. Macronutrients provides energy necessary for the cellular processes required for daily functioning (II), whereas, Micronutrients are required in small amounts for normal growth, development, metabolism^(4,5).



Generalized healthy diet and lifestyle pyramid⁽⁵⁾

Nowadays, there are many different kinds of diet, contributing in healthy life-style. These diets are also useful to reduce the risk of Non-Communicable disease and also, in communicable disease,

This diet improves the immunity of humans. Basically, healthy life-style comprises by having nutrition and physical activity as everyday routine to get healthy life-style the combination of Macronutrient and Micronutrient is very important Macronutrients such as Carbohydrates, Proteins and fats, makes the body by providing energy required for daily functioning. Micronutrients such as vitamins and minerals required in small amounts for normal growth, development, metabolism and other functioning^(5,6).

	Macronutrient intake grams per day (possible range)	Caloric intake kcal per day
Whole grains Rice, wheat, corn and other	232	811
Tubers or starchy vegetables Potatoes and cassava	50 (0-100)	39
Vegetables All vegetables	300 (200-600)	78
Fruits All fruits	200 (100-300)	126
Dairy foods Whole milk or equivalents	250 (0-500)	153
Protein sources Beef, lamb and pork	14 (0-28)	30
Chicken and other poultry	29 (0-58)	62
Eggs	13 (0-25)	19
Fish	28 (0-100)	40
Legumes	75 (0-100)	284
Nuts	50 (0-75)	291
Added fats Unsaturated oils	40 (20-80)	354
Saturated oils	11.8 (0-11.8)	96
Added sugars All sugars	31 (0-31)	120

Although required in trace amounts compared with macronutrients are important for normal growth, metabolism, physiologic functioning and cellular integrity^(5,6). The shift from whole foods to processed, refined food has reduced the micronutrients quality of the Modern Weston diet⁽⁵⁾. Vitamin and mineral inadequacies have been implicated in cellular aging and late onset diseases as scarcity drives chronic metabolic disruption. Keeping with these observations, adequate dietary intake of, Micronutrients that have antioxidant properties (Vitamin A, C, E, copper, zinc and selenium) has been suggested as a means to reduce the risk for and progression of related diseases^(6,7).

Conclusion

Healthy life style can be achieved by having proper nutrition. In the changing world where everyone one of us is facing the problem of biomagnification and

low immunity proper nutrition is very important for sustainable development too. By having proper diet non communicable diseases can be controlled and health can be maintained.

References

1. Ames B. N. Low micronutrient intake may accelerate the degenerative diseases of aging through allocation of scarce micronutrients by triage. Proc. Natl.Acad. Sci. USA. 2006;103:17589-17594.
2. Caudill M. A., Editors, Biochemistry, Physiology and Molecular Aspects of Human Nutrition 3rd ed. Elsevier Saunders: St Louic, Mo, USA:2013. p.49
3. Global action plan for the Prevention and control of Non-communicable Diseases, 2013-2020.
4. Hohn A., WeberD., jUNGt., OttC., hUGOm., KochlikB., kehmR., GruneT., Castro J.P.Happily (n) ever after: Aging in the context of oxidative stress, proteostasis loss and cellular senescence.Redox Biol.2017.11:482-501.
5. National Library of Medicine; National center for Biotechnology information, USA, April 3,2023
6. Willet W, Rockstrom J, Loken B, Springmann M.Long T, Vermeulen S, Garnett T, Tilman D. DeClerck F, Wood A et al, Food in the Anthropocene : the Eat-Lancet commission on healthy diets from sustainable food systems.Lancet.2019;313(101,70) : 447-92
7. World Health Organisation Geneva, Switzerland: 2013. Stipanuk M.H., Caudill M.A., Structure and Properties of the Macronutrients in : Stipanuk M.H.



Happy and Stress Free Mind Translates to A Healthy Life. A Study on Life Skills of B. Ed. Students

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Abstract

The present study was explored to find out the life skills of B.Ed. students. Survey method was used in this study. A sample of 100 B.Ed. students was chosen from different Colleges of Education in Jalgaon through simple random sampling technique. The data were collected using Life Skills Assessment Scale which was developed by the researcher. T-test analysis revealed that there was significant difference in life skills of B.Ed. students with reference to gender, residential background and entry level qualification, and there was no significant difference in life skills of B.Ed. students with regard to methodology opted.

Keywords : Life Skills, B.Ed. Students.

Introduction

Sound mind is sound body. Life skills can include the ability to manage our emotions, our health, our finances, our relationships, our school performance, and our ability to master these things has a direct impact on how we feel about our self, our emotional balance, our physical health and our independence. Life skills are defined as “a group of psychosocial competencies and interpersonal skills that help people make informed decisions, solve problems, think critically and creatively, communicate effectively, build healthy relationships, empathize with others, and cope with and manage their lives in a healthy. The World Health Organization has proposed a set of life skills. Life skills education helps students build confidence in both communication and cooperative & collaborative skills, provide them with tools important for development, find new ways of thinking and problem-solving and provide methods on how to socialize, make new friends and recognize the impact of their actions.

Importance of life Skills

Why Life Skills? Most individuals do not think of the need for being aware of ‘SELF’. And most often, we

do not pay attention on understanding our own strengths and weakness and the opportunities available and ahead of us. This sometimes results in low self esteem, inability to handle pressures at work and in personal lives, eventually ending up in Depression. What is Life Skills all about? UNICEF defines life skills as “a behavior change or behavior development approach designed to address a balance of three areas: KNOWLEDGE, ATTITUDE, and SKILLS”. WHO defines life skills as “the abilities for ADAPTIVE and POSITIVE Behavior that enable the individuals to deal effectively with the demands and challenges of EVERY DAY LIFE . Who require this? It is applicable for everyone (from children to Adults), who would like to be most successful in career and look for a quality personal life. Ideally if these skills are given from school age, the effect will be seen when the individual is ready to take decisions related to their choice of career and accordingly the selection of courses, be it professional or otherwise. Sometimes we are baffled with indecisive situations and to find answers become a herculean task. In such tricky situations, life skills help to bridge the gap. ‘WHO’ has categorized most important 10 life skills under three broad categories:

- **Thinking Skills :** Self awareness, Critical thinking, Problem solving, Decision making, and Creative thinking.
- **Social Skills :** Effective Communication, Empathy, and Interpersonal relationships.
- **Emotional Skills :** Dealing with Emotions and Coping with stress.

Ask the famous basketball player Larry Bird about what constitutes a winner, he says, “A Winner is someone who recognizes his God-given talents, works his tail off to develop them into skills and uses these skills to accomplish his goals”. A HAPPY AND STRESS FREE MIND TRANSLATES TO A HEALTHY LIFE.

Subsequently, in course time, you will have the option to learn better and continuously move towards excellence. Also, life skills such as effective communication, interpersonal relationships, and empathy and conflict resolution help you understand others and coexist with them agreeably. Some other life skills like critical thinking, creative thinking, decision making and problem-solving help you manage with problems and issues that you face in your life. Life skills, in this manner, are very important for an individual. Despite this, so far, no serious efforts are being made to teach these skills to students. Despite the fact that we teach them various cognitive skills, life skills are yet to find their way into our class-room teaching. Keep this in view; the researcher has taken up the present study entitled 'A Study on Life Skills of B.Ed. Students'.

Objectives of the Study

1. To study the life skills of B.Ed. students in terms of gender.
2. To study the life skills of B.Ed. students in terms of residential background.
3. To study the life skills of B.Ed. students in terms of entry level qualification
4. To study the life skills of B.Ed. students in terms of methodology opted.

Hypotheses

1. There is no significant difference between male and female B.Ed. students in their life skills.
2. There is no significant difference between rural and urban B.Ed. students in their life skills.
3. There is no significant difference between graduate and postgraduate B.Ed. students in their life skills.
4. There is no significant difference between science and arts B.Ed. students in their life skills

Methodology

The study was carried out by descriptive survey method. The population included all the B.Ed. students belonging to various Colleges of Education in Jalgaon, Khandesh region of Maharashtra. A sample of 100 (50 male and 50 female) B.Ed. students was selected through simple random sampling technique. 'Life Skills Assessment Scale' was prepared by the researcher. It contains 30 items with Likert type five-point scale (Strongly Agree, Agree, Undecided, Dis Agree and Strongly Disagree). Minimum score is 30 and Maximum score is 150. The data were analyzed using Mean, SD and t-test.

Testing of Hypotheses

Table 1 : t-value of Life Skills of B.Ed. Students based on Gender, Residential Background, Entry Level Qualification and Methodology Opted

Variable	Sub-sample	N	Mean	SD	t-value	Remark
Gender	Male	50	94.16	9.353	2.479	Significant
	Femal	50	98.36	7.488		
Residential Background	Rural	43	93.51	8.093	2.869	Significant
	Urban	57	98.33	8.613		
Entry Level Qualification	UG	40	91.55	8.476	4.916	Significant
	PG	60	99.40	7.358		
Methodology Opted	Science	45	95.93	9.891	0.339	Not Significant
	Arts	55	96.53	7.652		

From Table - 1

The t-value is 2.479 which is significant at 0.05 level with df=98. It shows that the mean scores of life skills between male and female B.Ed. students differ significantly. The mean score of life skills of female students is 98.36 which is higher than those of male students whose mean score is 94.16. Thus, the hypothesis-1 is rejected. The t-value is 2.869 which is significant at 0.05 level with df=98. It shows that the mean scores of life skills between rural and urban B.Ed. students differ significantly. The mean score of life skills of urban students is 98.33 which is higher than those of rural students whose mean score is 93.51. Thus, the hypothesis-2 is rejected. The t-value is 4.916 which is significant at 0.05 level with df=98. It shows that the mean scores of life skills between graduate and postgraduate B.Ed. students differ significantly. The mean score of life skills of postgraduate B.Ed. students is 99.40 which is higher than those of graduate B.Ed. students whose mean score is 91.55. Thus, the hypothesis-3 is rejected. The t-value is 0.339 which is not significant at 0.05 level. It shows that the mean scores of life skills of science and arts methodologies B.Ed. students did not differ significantly. Thus, the hypothesis-4 is accepted.

Findings of the Study

There is significant mean difference in life skills of B.Ed. students in terms of gender.

There is significant mean difference in life skills of B.Ed. students in terms of residential background.

There is significant mean difference in life skills of B.Ed. students in terms of entry level qualification.

There is not significant mean difference in life skills of B.Ed. students with regard to methodology opted.

Conclusion

Life skills are skills, strengths, and abilities that can help students face life issues with a positive attitude and carry out different errands with viability and productivity. Training for life skills advances mental health and general wellbeing of prospective teachers which is imperative as the teachers frequently work in assorted circumstances. To improve the level of life skills of B.Ed. students,

legitimate curricular orientation alongside intervention program should be incorporated at teacher training level. The present study may build up an insight to concerned stake holders to give the ways to develop essential skills and abilities among prospective teachers. It is expected that the future teachers would develop essential constructs of life skills which not just assist them with confronting difficulties in life certainly yet in addition to empower them to prepare their students, to use the skills in their professional life.

References

- Alaka Das. (2019). A Study of Life Skills in relation to Academic Anxiety of the B.Ed. Students. Paripex Indian Journal of Research, 8(12), 26-27.
- Amit Hemant Mishal. (2016). A Study of Effectiveness of Life Skill Training of Training Programme on Self-Esteem of Teacher Trainees at B.Ed. Level - Pilot Study. International Journal of Research in Teacher Education, 7(2), 9-17.
- Dhanalakshmi, M. (2019). Perspectives on Quality Teacher Education: A Study on Life Skills among the B.Ed. Students. Journal of Emerging Technologies and Innovative Research, 6(3), 243-247. Life Skills Education for Children and Adolescents in Schools - World Health Organization.
- Pramod, D. & Celine, P. (2011). A Study on the Level of Life Skills of Student Teachers of Kerala". Indian Journal of Life Skill Education, 2(2), 389-399.
- Rakesh Sandhu. (2014). A Study of Life Skills of Pupil Teachers. Indian Journal of Fundamental and Applied Life Sciences, 4(3), 389-395.
- Sarika Chauhan. (2016). Effectiveness of a Life Skills Programme on teacher trainees. International Multidisciplinary E-Journal, V(IV), 90-98.
- Sridevi, M, Amuthavalli.G.T. (2019). Teacher Trainees' Life Skills – A Study. Research Tracks, VI(II), 6-10.
- Usha Rao. (2016). Life Skills (Vol. II). Himalaya Publishing House Pvt. Ltd.
- Vijayarani, J., & Geetha. D. (2017). Study on life skills and value education among B.Ed. Trainees. International Journal of Research - Granthaalayah
- https://ijrte.penpublishing.net/files/5/manuscript/manuscript_194/ijrte-194-manuscript-130334.pdf
- <http://www.jetir.org/papers/JETIRDL06043.pdf>
- <https://www.cibtech.org/J-LIFESCIENCES/PUBLICATIONS/2014/Vol-4-No-3/JLS-055-061-SANDHU-A-TEACHERS.pdf>
- <http://www.shreeprakashan.com/Documents/20160430142939588.13.Sarika%20Chauhan.pdf>
- <https://www.ycjournal.net/ResearchTracks/ResearchDocuments/TeacherTra637089901650532490.pdf>



Pilates A Flawless Method for Healthy Life Style

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According to WHO "Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity."

Nutrition is the intake of food in relation to the dietary needs of the body. Good nutrition (a sufficient and balanced diet combined with regular physical exercise) is a fundamental element of good health. Good nutrition indicates the right amount of nutrients for proper utilization for achieving the highest level of health.

A person should be healthy in terms of physical, mental, and social well-being and not a mere absence of any disease. Then we can say it is a good nutritional status.

Relationship between Nutrition and Healthy life style

- There is a strong relationship between nutrition and health; hence we want to make the right food choices to ensure you live the best life possible.
- There is an important connection between nutrition and a healthy lifestyle, and it plays a major role in our life.
- Good nutrition is the key to leading a healthy lifestyle. We can improve our health if we take care of ourselves. Eating a balanced diet is an important part of good health.
- Nutrition plays an important role in promoting good health.

Dr. Jacobs suggested 6 Pillars of Healthy Living

- Active Living
- Healthy Eating
- Restorative Sleep
- Stress Reduction and Awareness
- Connection
- Passion and Purpose
- Gratitude.

These all pillars maintain good health, and create a

balance between all aspects of our life. Out of all these pillars here we see the details of first pillar that is Active Living.

An active living /lifestyle means to undertake physical activity regularly and consistently, Regular physical activities not only make you feel good about yourself but also can improve your health and reduce the risk of developing several types of many health issues.

There are many ways you can add physical activity to your healthy lifestyle. Out of which Pilates method is a best method. Joseph Pilates is a founder of this method. His well known quote is "Fitness is the first condition for happiness"

Meaning of Pilates method

- Pilates is a method that is used to train from the combination of various disciplines, such as yoga, gymnastics.
- It is a set of exercises whose purpose is to exercise the body and mind, since by practicing it.
- It improves our physical condition.
- It increases our ability to control and focus.
- It is also known by the name of 'Contrology'.

It is based on exercises that help improve the toning of the muscles through a succession of fluid movements. Its essence lies in the use of the brain to control the body, promoting balance.

Principles of the Pilates Method

Pilates is based on 6 fundamental principles to apply during each movement to reap the full benefits of the practice. The six essential principles of this method are:

1. **Concentration :** To fully appreciate the benefits of Pilates it is necessary to focus attention entirely on the body, movements, and breathing, being aware of what is being done. Thus a rapport between the mind and the body

is achieved.

2. **Control :** It is important that the brain controls any movement, to avoid fast, uncontrolled, automated and, ultimately, incorrect movements, which can lead to physical injury. Initially, its creator called the method “Contrology” because of the relevance of this factor.
3. **The Center :** The center designates the entire abdominal strap: from the bottom of the ribs to the top of the hip as well as the back. Basically, the whole waist. All attention during each movement should be brought to this area to verify its correct placement and shape. The abdominals must be kept under pressure and sheathed during the entire session to absorb the navel (or dig the belly).
4. **Precision :** It is obtained thanks to the control that each movement requires. Each movement has a purpose, so it is key to execute it precisely so that it meets its objective. If it is not taken into account, it is possible that a bad posture is adopted and this can cause injuries, stiffness or pain, so that the benefits of the method are not fully exploited.
5. **Fluidity :** Fluidity is understood as making movements constantly, without stopping between them. There are breaks, but they have a certain place in time and duration that must be respected, as well as the natural flow of the body and the time necessary for the exercises to be carried out properly.

Flexibility is essential in the fluidity factor, to make safe movements and avoid those that may be violent or spasmodic, and that generate pauses and interruptions. The muscles gradually become more flexible.
6. **Breathing :** Breathing is the first act of life and the last. Our very life depends on it. Since we cannot live without breathing it is tragically deplorable to contemplate the millions and millions who have never mastered the art of correct breathing. Therefore, breathing is the most important principle of Pilates, it must be paid special attention. This breathing should be deep by filling the lungs to the maximum of their

capacity with each inspiration and by emptying them completely with each exhalation.

By applying these principles to his practice, each person will end up developing good physical shape. The only way to develop good physical shape is through regular practice (ideally daily) over the years. .

Benefits of Pilates method

1. Being aware of our own body. Know how to dissociate movements by working the different parts of the body separately, reducing and eliminating tension while executing the exercise.
2. The work of the core. The center, abdominal muscles, and lower back are activated at all times. 3- Breathe control. It will guide the rhythm of the exercises and determine their degree of difficulty.

Conclusions

Knowing this method thoroughly is a long process and the Pilates method has been so successful for a few years already. Pilates helps to become more aware of your body and to obtain visible results without sweating too much.

This method based on strengthening deep muscles, and gentle gymnastics, Pilates sessions combine stretching, body awareness and of course bodybuilding.

The increase in muscle mass allows an increase in the basic metabolism and therefore more calories burned!

Regular Pilates can quickly restore a flat stomach.

Stretching and lengthening the legs allows you to refine your figure, especially your waist and thighs.

The release of stress thanks to the Pilates method makes it possible to avoid the uncontrolled excesses of “food-compensation”, where one eats to reduce one’s stress.

Improving one’s concentration and self-awareness promotes the installation of new, healthier lifestyle habits.

Ideally, the Pilates session will be complemented by a cardio session and accompanied by a healthy and balanced diet

References

- [https://google.com/book about Return to life-Through Contrology](https://google.com/book%20about%20Return%20to%20life-Through%20Contrology)
- [www.acefitness.org/Pilates study 2006](http://www.acefitness.org/Pilates%20study%202006)



A Comparative Investigation of Cardio-Vascular Endurance of The Students Dwelling in Slum and Non-Slum Area of Mumbai

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Abstract

Introduction Before 1950 slums were predominantly found around the mills, on the western part of the island, predominantly in an area called Sewri. They were mostly industrial workers in one room tenements. Health and provisions to these areas were issues that were ignored by the head policy makers. Instead of going away, the slums have just spread. From 1950 to 1968 the population of slums increased 18%, in the 1970s they had a huge surge and by 1980 slum dwellers were half of the entire city's population. **Design of study** This is a comparative investigation of cardio-vascular endurance of the students dwelling in slum and non-slum area of Mumbai. **The Subject was** One hundred ($n_1=100$) male school students, aged 12 to 15 years, from four slum areas of Mumbai viz., Dharavi (Sion), Kiswai nagar (sewri), Antop hill (Wadala) and Mankhurd and another one hundred ($n_2=100$) male school students of same age group from four non slum areas of Mumbai viz., Matunga, Dadar, Andheri, and Nepeancy road Mumbai were pulled randomly (considering Fishers' random table technique) as sample for this investigation. **Variable for this investigation**, cardio-vascular endurance component of health-related physical fitness was surveyed and data was collected by using 9 Minute Run or Walk test, data was collected actually subjects covered distance in meter. **Discussion** Obtained results of Paired sample 't' test is shows significant difference between Slum and Non Slum Area School Students. Cardio vascular ability of the slum area school student was less than the non-slum area school student by 118.87 meters as measured by nine minute run or walk test. Less Cardio vascular ability may be due to improper diet, inadequate provision of basic infrastructure of health and fitness, public services necessary to sustain health. Therefore the study is recommended that, further studies may be helpful to support the obtained results. **Conclusion.** This study is conclude that the mean scores of

Slum and Non Slum Area School Students were not equal and differ statistically significant.

Key Words : Slum, Non-Slum, Comparison of Slum & Non Slum

Introduction

Before 1950 slums were predominantly found around the mills, on the western part of the island, predominantly in an area called Byculla. They were mostly industrial workers in one room tenements. Health and provisions to these areas were issues that were ignored by the head policy makers. Instead of going away, the slums have just spread. From 1950 to 1968 the population of slums increased 18%, in the 1970s they had a huge surge and by 1980 slum dwellers were half of the entire city's population. Despite the fact that the city underwent slum clearance, implemented by the Municipal Corporation in 1954, the BMC (Bombay Municipal Corporation) reported today slum dwellers make up 60% of Mumbai's population that is approximately 7 million people. The eventually spread into the areas neighboring Byculla, such as: Mahim Creek, Parel, Dadar and Matunga, Sion and wherever else they can find space, even in roads. The conditions in the slums are terrible.

The financial capital of India known as Mumbai is home to estimate 7 million slum people, which is nearly 60% of Mumbai's population lives in slum areas. Various research studies were undertaken to improve the financial, social and health status but the comparative survey of health-related and performance-related fitness of slum dwellers with any other population is meager.

Design of The Study

This is a comparative investigation of cardio-vascular endurance of the students dwelling in slum and non-slum area of Mumbai.

The Subject

One hundred ($n_1=100$) male school students, aged 12 to 15 years, from four slum areas of Mumbai viz., Dharavi (Sion), Shivajinagar (Govandi), Antop hill (Wadala) and Mankhurd and another one hundred ($n_2=100$) male school students of same age group from four non slum areas of Mumbai viz., Matunga, Dadar, Andheri, and Nepeancy road Mumbai were pulled randomly (considering Fishers' random table technique) as sample for this investigation.

Variables

For this investigation, cardio-vascular endurance component of health-related physical fitness was surveyed and data was collected by using 9 Minute Run or Walk test, data was collected actually subjects covered distance in meter.

Statistical Procedure

Standard statistical technique 't' test is used to compare the two data sets of slum and non-slum area school students to compare the cardio-vascular endurance ability

Table - 1

N, Mean, Standard Deviation, Mean Difference, 'df', 't' value of Cardio-Vascular Endurance of Slum and Non Slum Area School Student

Cardio-Vascular Endurance	N	Mean	Std. Deviation	Mean Difference	df	t	Sig. (2-tailed)
Non Slum Area School Student	100	1026.85	124.09	118.87	198	-4.002	.000
Slum Area School Student	100	1145.72	269.87				

Values of mean scores, obtained from paired samples statistics presented in Table-1 of Cardio-Vascular Endurance of Slum and Non Slum Area School Students. Mean score of Cardio-Vascular Endurance of Slum and Non Slum Area School Students were, 1026.85(SD 124.09) and 1145.72(SD 269.87) respectively, Mean difference of the same was 118.87 which was tested by paired samples 't' test at 198 degrees of freedom, 't' value was found

-4.002, which was statistically significant ($p=0.01$). The results are help to interpret that the mean scores of Slum and Non Slum Area School Students were not equal and differ statistically significant.

Discussion

Obtained results of Paired sample 't' test is shows significant difference between Slum and Non Slum Area School Students. Cardio vascular ability of the slum area school student was less than the non-slum area school student by 118.87 meters as measured by nine minute run or walk test. Less Cardio vascular ability may be due to improper diet, inadequate provision of basic infrastructure of health and fitness, public services necessary to sustain health. Therefore the study is recommended that, further studies may be helpful to support the obtained results.

Conclusion

This study is conclude that the mean scores of Slum and Non Slum Area School Students were not equal and differ statistically significant.

References

- Monyeki, M. A., Koppes, L. L., Kemper, H. C., Monyeki, K. D., Toriola, A. L., Pienaar, A. E., & Twisk, J. W. (2005). Body composition and physical fitness of undernourished South African rural primary school children. *European Journal of Clinical Nutrition*, 59(7), 877-883.
- Singh, H., Singh, T., Chawla, & Singh, S. (1987). Norms of physical fitness for hockey goalkeepers. *SNIPES Journal*, 10(1&2), 3.
- Tucker, L. A., Seljaas, G. T., & Hager, R. L. (1997). Body fat percentage of children varies according to their diet composition. *Journal of the American Dietetic Association*, 97(9), 981-986.
- Yokoyama, Y. (1985). Relationship between physique and measured intelligence level in mentally retarded children. *The Japanese Journal of Psychology*, 55(6), 370-373.



A Comparative Study of Selected Motor Components between Winner and Runner Team of Inter Collegiate Level Kabaddi Tournaments

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Introduction

Kabaddi is aptly known as the “GAME OF THE MASSES” due to its popularity, simplicity, easy to comprehend rules, and public appeal. The game calls for no sophisticated equipment what so ever, which makes it a very popular sport in the developing countries. It is basically an outdoor sport played on clay court; of late the game is being played on synthetic surface indoors with great success. The duration of the game is 45 minutes for men & junior boys with a 5 minutes break in between for the teams to change sides. The duration of the game is 35 minutes with a 5 minutes break in between for women, girls, sub-junior boys and sub-junior girls.

Kabaddi is a combative team game, played on a rectangular court, either out-doors or indoors with seven players on the ground for each side. Each side takes alternate chances of offence and defense. The basic idea of the game is to score points by raiding into the opponent's court and touching as many defense players as possible without getting caught on a single breath. During play, the players on the defensive side are called “Antis” while the player of the offense is called the “Raider”. Kabaddi is perhaps the only combative sport in which attack is an individual attempt while defense is a group effort. The attack in Kabaddi is known as a ‘Raid’. The antis touched by the raider during the attack are declared ‘out’ if they do not succeed in catching, the raider before he returns to home court. These players can resume play only when their side scores points against the opposite side during their raiding turn or if the remaining players succeed in catching the opponent's raider.

Objectives

1. To find out the difference taking in strength, speed and endurance among winner and runner team of inter collegiate level Kabaddi tournaments.

2. To analyze the developments taking in strength, speed and endurance among winner and runner team of inter collegiate level Kabaddi tournaments.
3. To compare the rate of development of strength, speed and endurance among winner and runner team of inter collegiate level Kabaddi tournaments.

Hypothesis

- **H-01** : The researcher hypothesize that winner team players do not show considerable differences in the development of strength, speed and endurance to that in runner team players.
- **H-02** : There is no significant difference in the development of strength between winner and runner team of inter collegiate level Kabaddi tournaments.
- **H-03** : There is no significant difference in the development of speed between winner and runner team of inter collegiate level Kabaddi tournaments.
- **H-04** : There is no significant difference in the development of endurance between winner and runner team of inter collegiate level Kabaddi tournaments.

Delimitations

1. The study is delimited to boys only.
2. The study is delimited to only winner and runner team of inter collegiate level Kabaddi tournaments in Pune University.
73. The study is delimited to the strength, speed and endurance tests applicable for subjects.

Limitations

1. Diet and rest of the players was a limitation.
2. Involvement of subjects during strength, speed

and endurance tests was a limitation.

- Physical, mental, weather, college, house and surrounding conditions were a limitation.
- Organization of the tests was adjusted with the concerned college's time tables.

Methodology

The samples of the study was purposefully selected from winner and runner team of inter collegiate level Kabaddi tournaments. All the selected subjects were good sportsman staying either in college hostels or at their residence. In all, 24 subjects were tested for this comparative study. The tests were selected in the aspects of development. In development the researcher has selected the standard tests in strength, speed and endurance. The tests were administered individually under standard condition applicable for specific tests and the time period required between two tests is amply considered.

Variables

Independent Variables

- Boys.
- Strength, speed and endurance Tests.

Dependent Variables

- Subjects Performance.

Tools

- Vertical Jump for Strength.
- 100 mtrs run for Speed.
- 12 min. run and walk Cooper Test for Endurance.

Procedure

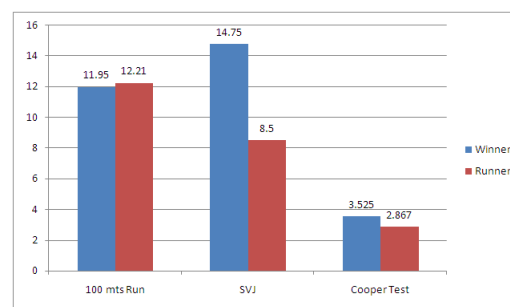
The subjects were selected from winner and runner team of inter collegiate level Kabaddi tournaments. In all 3 tests, 1 was selected for evaluating the development of strength, 1 was selected for evaluating the development of speed and 1 was selected for evaluating the development of endurance of the subjects. To have the difference of data for assessing the development it was decided to organize the test on 24 subjects.

Results

Showing the Comparison of the Mean Scores of the Winner and Runner Team of Inter Collegiate Level Kabaddi Tournaments

VARIABLE	GROUP	N	MEAN	STD DEV	't' Test	DF
100 meters run (Seconds)	Winner	12	11.95	.10757	2.988*	22
	Runner	12	12.21	.28160		
Standing vertical jump (Inches)	Winner	12	14.75	3.793	4.722*	22
	Runner	12	8.50	2.576		
Cooper Test (Km)	Winner	12	3.525	263.283	8.042*	22
	Runner	12	2.867	104.891		

*Significant at 0.05 level.



Discussion

The development of speed (100 meters run), strength (standing vertical jump) and endurance (12 min. run and walk cooper test) in between winner and runner team of inter collegiate level kabaddi tournaments is found Significant when tested for significance by t- test at 0.05 levels.

References

- CRATTY B.J., (1973) "A Survey of Selected Physical Abilities in Elementary School Children," Unpublished Monograph, Perceptual- Motor Learning Laboratory, UCLA.
- DEVINDER, K. KANSAL, (1996), "Test and Measurements in Sports and Physical Education", D.V.S. Publication, New Delhi- "Identification of Fitness and Motor Ability Terms", 108-19.
- ESPENSCHADE, A.S., and H.M. ECKERT, (1967) "Motor Development," Columbus, Ohio: Charles E. Merrill.
- GARRETE, H., (2008) "Statistics in Psychology and Education," Surjeet Pub.
- GILBERT, J.A., (1984) "Researchers on the Mental and Physical Development of School Children," Studies from the Yale Psychological Laboratory, 40-100.
- HARDAYAL SINGH, (1991) "Science of Sports Training", D.V.S. Publications, New Delh.
- KANSAL, D. K., (2008) "Textbook of Applied Measurement, Evaluation and Sports Selection," Sports and Spiritual Science Pub.
- KOTE, S. M., (1997) "Scientific Coaching Manual for Martial Arts".
- SINGH, A., (2008) "Essentials of Physical Education," Kalyani Pub., 3rd edition.



A Study and Standardization of Specific Physical Fitness Test for Volleyball Players

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Abstract

Today's games and sports demand best specific physical fitness for the best performance. For a specific game or event, the player must possess all of the body parts to be fit essential to the best performance and must have the proper body size and shape for the activity. Minor individual differences (The point of attachment of tendons to bones and difference in lengths of bones) result in different mechanical leverage advantages or disadvantages for a variety of events or games. There is a player who is fit for weight lifting, another for sprint running and yet another for Volleyball or any game. If a player enters in a competition for which he is automatically unfit, he does so with a separate disadvantage compare to his opponents who have automatic features to the event or game. The physical fitness training for the players or athletes should be based on the specificity of game or event. To establishing fitness training methods, the coach or players must give importance to specific training that optimally adopts the specific factors that involve in the game or event. Physical fitness training should be specific according to the aim.

The problem of present research was entitled as "Construction and standardization of Specific Physical Fitness Test Battery for Volleyball Players". Objectives of the research were to develop the Specific Physical Fitness Test Battery and to prepare the norms for the test battery for University level male players of Volleyball.

Objectives of The Study

The present objective of the study was to construct the Specific Physical Fitness Test Battery for the college level players of Volleyball and to prepare the norms of Test for the university level players of this game.

Significance of The Problem

Although the subject has been fairly extensively discussed in the advanced countries, in India there are no

specific motor fitness tests available for several games, including volleyball. The measures adopted for testing fitness levels are generally not specific to the game. This does not provide a true picture of fitness specific to a sport like volleyball. This study will help coaches, conditioners and physical education teachers to design and formulate conditioning program for volleyball players, based on specific principles. Further, the tests could be expected to yield norms to measure and classify the specific motor fitness status of women volleyball players at the college level. The work may also help in setting specific motor fitness goals, leading to an improvement in performance, technique and tactics in volleyball.

Delimitations of The Study

1. The Study was delimited to the players of Volleyball.
2. The Study was delimited to the players of 16 to 20 years.
3. The Study was delimited to only M J Junior College jalgaon.
4. The players of 16 teams which were in the last four teams of the inter-college completion of Volleyball in their respective Universities.

Limitations of The Study

1. Some factors like diet, rest, sleep etc. were beyond the control of the investigator. These factors were considered as limitations of the study.
2. During the tests, the aptitude of the players might had influenced the results of the study, this was considered as the limitation of the study.
3. No Motivational (psychological) technique was applying during the tests. Due to lack of motivation, therefore the difference that might have occurred in performance which can be

considered as the limitation of the study.

4. The players were from different socio-economic groups, their life style, dietary habits, routine of study and play were different which were considered as limitations of the study.

Design of The Study

Descriptive type study was designed to collect the required information on the selected test items and the statistical procedure was adopted to develop the test battery and norms for the male players of Volleyball.

Selection of Variables and Test Items

Review of literature, discussion with Volleyball coaches and experts, availability of instruments & measuring techniques and demands of the Volleyball were kept in mind while selecting specific fitness variables for the development of Volleyball test battery. It is a well-known fact that game of Volleyball is a highly intense game which requires muscular power, strength endurance, speed, cardio-vascular endurance, and agility for the period of match time. Quick-acceleration, dodging, back and side running are also have high importance for this game.

Volleyball is one of the finest forms of exercise, bringing in to use all the muscles of the body, and is also a wonderful mental stimulant. These all aspects were considered before the selection of variables for the test battery.

In the present study following test items were selected under various parameters of physical fitness for the development of specific physical fitness test battery.

Speed- 50 meters

Muscular Power- Medicine ball throw

Agility- Shuttle Run

Cardio-Vascular Endurance- 600 meters run

Administration of Tests

The help of qualified Volleyball coaches and teachers of Physical Education was taken by the scholar to administer the tests to the subjects. The investigator was taken care to explain the tests and the testing procedure to the helpers and the subjects. All the test items were demonstrated to the Volleyball players so that the players can form a mental picture of the various tests they were going to perform. The subjects were directed to come in proper playing kit during the performance of the tests and advised to go through general warming up before testing. Adequate recovery time was provided to all subjects during tests. No motivational techniques were used to enhance their performances. But each subject performed on each test enthusiastically with the spirit of competition to surpass his counterparts and know his status of Physical Fitness.

Collection of Data

The data of the chosen test items was collected on

the players inter college Volleyball players in MJ junior college Jalgaon

The data was collected after inter college competition up to the month of March. This period was considered to be the best period for the collection of data as the Volleyball players and it was brought to have acquired maximum fitness. Before the testing programmed was organized, the researcher was assembled all the Volleyball players together to brief them on the nature, the modalities and the objectives of the present investigation. The scholar was gathering the subjects at different periods of times, and demonstrated to them various tests so that they could form a mental picture of the various tests they were going to take.

Methodology

Information (data) from the score sheets was entered into Microsoft Excel, analyzed and descriptive statistics computed using an SPSS (version 21.00) to obtain all required statistical calculations.

Table - 1

T-TEST FOR 50 METERS RUN TEST

		N	Mean	SD	't' value
50 M Run	Successful	35	6.83	0.14	5.61
	Unsuccessful	35	7.10	0.25	

Significance at .05 Level of confidence 't' at .05 level (df=68) = 1.99

It is indicated from the table no. 4.28 that 50 M Run Test between successful and unsuccessful players found to have mean score of 6.83 and 7.10 respectively. The 't' ratio between the mean score of these two different groups came out to be 5.61 which is significant at 0.05 level confidence. It indicates that there is significant difference on 50 Meters Run Test among successful and unsuccessful players of Volleyball Graphical presentation is presented in figure

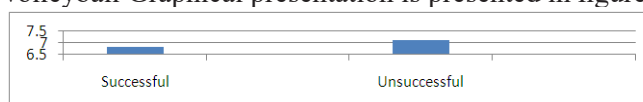


Table - 2

T-TEST FOR MEDICINE BALL THROW TEST

		N	Mean	SD	't' value
Medicine Ball Throw	Successful	35	12.23	0.74	7.76
	Unsuccessful	35	10.45	1.14	

Significance at .05 Level of confidence, 't' at .05 level (df=68) = 1.99

It is indicated from the table no. 4.26 that Medicine ball throw Test between successful and unsuccessful players found to have mean score of 12.23 and 10.45 respectively. The 't' ratio between the mean score of these two different groups came out to be 7.76 which is significant at 0.05 level confidence, It indicates that there is significant difference on Medicine Ball Throw Test among successful and unsuccessful players of Volleyball. Graphical presentation of mean is presented in figure

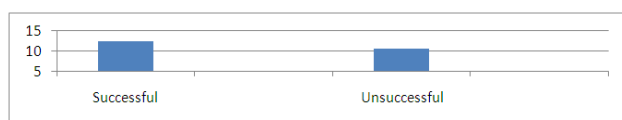


Table - 3
T-TEST FOR SHUTTLE RUN TEST

Shuttle Run		N	Mean	SD	't' value
	Successful	35	11.58	0.80	5.36
	Unsuccessful	35	12.67	0.90	

Significance at .05 Level of confidence, 't' at .05 level (df=68) = 1.99

It is indicated from the table no. 4.30 that Shuttle Run Test between successful and unsuccessful players found to have mean score of 11.58 and 12.67 respectively. The 't' ratio between the mean score of these two different groups was 5.36 which is significant at 0.05 level. It indicated that there is significant difference on Shuttle Run Test among successful and unsuccessful players of Volleyball. Graphical presentation is presented

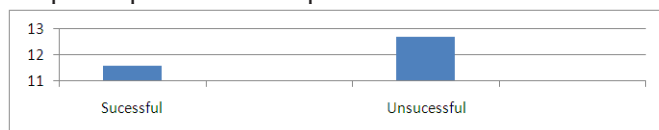
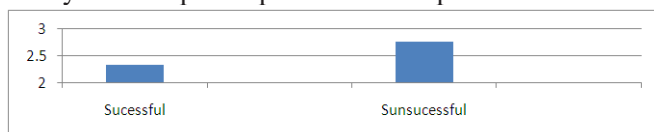


TABLE 4
T-TEST FOR 600 METERS RUN TEST

600 Meters Run		N	Mean	SD	't' value
	Successful	35	2.32	0.23	6.13
	Unsuccessful	35	2.75	0.34	

Significance at .05 Level of confidence, 't' at .05 level (df=68) = 1.99

It is indicated from the table no. 4.32 that 600 M Run Test between successful and unsuccessful players found to have mean score of 2.32 and 2.75 respectively. The 't' ratio between the mean score of these two different groups came out to be 6.13 which is significant at 0.05 level confidence. It indicated that there is a significance difference on 50 M Run Test among successful and unsuccessful players of Volleyball. Graphical presentation is presented



Development of The Norms

Test may be applicable with norms. Standardization of the test battery was also objective of the study. A test that has accompanying norms is definitely preferred to one that does not. Norms provide information to the coaches, teachers and players. They may be useful to them to interpret the players score in relation to the scores made by the other players in the same population. In this study the norms have been developed to judge the specific physical fitness of the players of Volleyball. After the administration of physical fitness test items, a battery was developed

for this purpose from the group of two hundred sixteen Volleyball Players. Only those male players of Volleyball were selected of 16 teams which M J junior college jalgaon. The percentile scale was applying to develop the norms, as it is found easier to all the coaches, trainers, researchers and testers to compare the result (Barnett and Peters, 2004; Bruininks and Bruininks, 2005). Moreover percentile rank provides a quick comparison with all other scores in the group (Chow and Henderson, 2003).

Findings

On the basis of results, the following findings were drawn :

1. The results showed that test items namely Medicine Ball Throw 0.85, 50 Meters Run 0.80, Shuttle Run 0.71, 600 Meters Run 0.79.
2. The results showed that the weight does not affect in balance ability and flexibility components of physical fitness for the players of Volleyball.
3. The results showed that weight affects in muscular power, speed, agility, cardio vascular endurance and reaction ability components of physical fitness.
4. The results showed that the height does not affect in strength endurance, and flexibility components of physical fitness for the players of Volleyball.
5. The results showed that height affects in muscular power, speed, agility, cardio vascular endurance and reaction ability components of physical fitness for the players of Volleyball.

Conclusions

Within the limitations of the present study, the following conclusions are enumerated:

1. A Specific Physical Fitness Test Battery for male players of Volleyball consisting of eight test items namely Medicine Ball Throw (Muscular Power), 50 Meters Run (Speed), Shuttle Run (Agility), 600 Meters Run (Cardio-Vascular Endurance) was constructed by the Factor Analysis Technique of Statistics.
2. A Short Specific Physical Fitness Test Battery for male players of Volleyball consisting of three test items namely Medicine Ball Throw (Muscular Power), 50 Meters Run (Speed) and 600 Meters Run (Cardio Vascular Endurance) was also yielded.
3. The Specific Physical Fitness Test Battery for Volleyball Male Players constructed by the investigator is valid, reliable and objective to judge the physical fitness ability of the players.
4. The Results of successful and unsuccessful

- players of Volleyball showed the significant difference on all selected test items of Test Battery
5. Volleyball players of three different weight categories namely light (upto 55 kilograms), middle (56 to 70 kilograms) and heavy (above 70 kilograms) were significantly differed on variables of Medicine Ball Throw (Muscular Power), 50 Meters Run (Speed), Shuttle Run (Agility), and 600 Meters Run (Cardio- Vascular Endurance).
 6. Two height categories up to 175 centimeters and above 175 centimeters were significantly differed on variables of Medicine Ball Throw (Muscular Power), 50 meters run (speed), Shuttle Run (Agility), Norms for Specific Physical Fitness Test Battery were developed according to three weight categories and two height categories separately beside common to all players.
 7. The newly constructed Specific Physical Fitness Test Battery meets the criterion of scientific authenticity i. e. reliable, objective and valid.

References

1. (a) BLOOM, BENJAMIN S., "Stability and Change in Human Characteristics," New York: Wiley, (1964). (b) ISMAIL, A.H., and J.J. GRUBER, Motor Aptitude and Intellectual Performance, Columbus: Charles E. Merrill, (1967). (c) ISMAIL, A.H., and D.R. KIRKENDALL, "Relationships among Three Domains of Development," paper presented in 2nd International Congress of Sports Psychology, Washington, D.C., (1968).
2. "Oxford Dictionary and Thesaurus" (2005).
3. "Reader's Digest Oxford Complete Word Finder" (1992).
4. "Reader's Digest Reverse Dictionary" (2002).
5. "Stedman's Medical Dictionary" Twenty first edition; The Williams and Wilkins Company Scientific Book Agency; (1969).
6. BAYLEY, NANCY, "The Development of Motor Abilities during the First Three Years," Monogr. Soc. Res. Child Dev., 1 (1935).
7. BERNAR, R.J., V.T. EDGERTON, and J.B. PETER, "Effect of Exercise on Skeletal Muscle I, Biochemical and Histochemical Properties," J. Appl. Physiol., 28 (1970), 762-66.
8. BRYANT, J. CRATTY, "Perceptual and Motor Development in Infants and Children," Prentice Hall Inc. (1979) pp. 187.



Physical Education and Sports : Current Scenario and Future Prospects

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Abstract

In today's space age and automation world, almost everyone seems to be living increasingly inactive lives. They prefer to ride instead of walk, sit instead of stand, and watch instead of participate. The need for physical education as part of a balanced life is therefore great and it is widely recognized that exercise and sport are important and important in developing an active and healthy lifestyle and as a solution to the growing obesity worldwide. Considering the above discussion, it is clear that physical education in India is often a neglected part of education and many schools across the country do not understand the importance of physical education as part of the system. There are many benefits to physical education and some schools have succeeded in finding a balance between academic learning and physical fitness. A well-planned systematic health plan that includes various exercise and sports activities will surely reduce the current disease situation in the world. Also, through the implementation of a systematic movement guide, ongoing individual health care costs can be reduced and this can balance a person's financial well-being.

Introduction

The deterioration of the situation of physical education and sport is worrying. It is a big challenge for the developing countries of the world to connect with other developed countries to get guidance from their trainers and authorities. Some people are confused by this term and do not know what it teaches. It is most often misunderstood as "physical conditioning exercises" (P.T. exercises). Others think that exercise is playing, such as football, hockey, racing and other competitive activities, when that is not the case either. Some believe that the purpose of physical education is to shape the body. Few others think that exercise is only for entertainment, fun

and enjoyment. In fact, these misunderstandings have led to many misunderstandings on the subject. In India, structured physical education must become an integral part of school curricula. Thus, for a young and socio-economically diverse population, moving through schools can become an effective all-round development tool for Indian children. The importance of physical education has never been more emphasized than today. In today's space age and automation world, almost everyone seems to be living increasingly inactive lives. They prefer to ride instead of walk, sit instead of stand, and watch instead of participate. Such inactivity or a sedentary life is very harmful to physical and mental health. Due to this loose and inactive lifestyle, people suffer from hypokinetic diseases such as diabetes, cervical and bony spondylitis, back pain, joint pain, obesity and cardiovascular diseases. The need for physical education as part of a balanced life is therefore great and it is widely recognized that exercise and sport are important and important in developing an active and healthy lifestyle and as a solution to the growing obesity worldwide. Although physical education is part of the school curriculum in most countries, classes do not take place, therefore the physical activity of children and young people decreases.

Current trends of Physical Education

The deterioration of the situation of physical education and sport is worrying. It is a big challenge for the developing countries of the world to connect with other developed countries to get guidance from their trainers and authorities. In this way, developing countries can get information about world-class infrastructure and technological equipment related to sports. Physical education in educational institutions is an area where physical education is increasing. Cricket, which has turned out to be a religion in India, is a media-driven game and raises the financial status of the players. At the same

time, cricket should not be overlooked, it is worth paying attention to other games as well.

Physical education of the future Inactivity has become a major cause of the global increase in non-communicable diseases (World Health Organization, 2009}). In 2008, the World Economic Forum called on employers to be active in the prevention of non-communicable diseases, an important factor in the development of a healthy workforce is a reliable group of employees who are receptive and aware of healthy lifestyle practices even before starting. work Health and Physical Education (HPE) is often stereotyped as “doing sport”. However, if HPE is to play its role in developing a healthy workforce, HPE’s learning environment must be designed to create meaningful learning for all, which is clearly more than creation. top athletes The ultimate goal of health and physical education teachers should be 1) development of lifelong and regular physical activity; 2) development of general physical skills; 3) inspiring holistic and positive emotional attitudes and) inspiring science-based knowledge to inspire civic engagement. In response to the global shift towards developing healthier people, there is currently a strong push in Australia for an expanded and more integrated role for HPE in the potential national curriculum. Other countries have been involved in such a process and there is much to learn from their experience. The Australian Council for Health, Sports Education and Recreation (ACHPER) Conference of 2009 was a major conference with an international panel of experts from all continents and 23 countries. Creating Active Futures: Draft Proceedings of the 26th ACHPER International Conference is a combination of research and professional perspectives presented at the conference. The articles in this volume arose from articles submitted for peer review rather than searching for specific articles. This volume is divided into parts based on five conference themes: 1) Themes in Health and Physical Education (HPE) pedagogy; 2) Practical application of science in HPE; 3) improvement of lifestyle;) development of sports excellence; 5) Teaching modern games. The “Topics in HPE Pedagogy” section offers different perspectives on teaching HPE on various paper topics, including first aid, philosophy, approach, cultural specificity, teaching methods and styles, curriculum, competence and emotional development. The second part combines science and HPE teaching and provides valuable information on injury prevention, information technology, personality and skill development. Volume 3 is a compilation of lifestyle improvement writings and research. Topics include adventure, nature, curriculum, immigrant perspectives, beliefs, and programs with a global focus on developing an active citizen. The Excellence in Sport section contains

articles that attempt to explain the aspect of excellence in sport. The final part of this book highlights some contemporary perspectives on teaching games.

Importance of Physical Education

Structured physical education must become an integral part of school curricula in India. Thus, for a young and socio-economically diverse population, moving through schools can become an effective all-round development tool for Indian children. Most schools in India have not integrated structured physical education into the school curriculum. The emphasis is on general subjects because schools do not understand how a structured physical education curriculum can promote the development of young children by increasing their physical, mental, emotional and social growth. With 29.5% of India’s population below the age of 1 (Census of India, 2011), physical education needs to be used as an effective tool for holistic development of Indian children from different socio-economic backgrounds. The obvious benefits of physical education in keeping children fit, active and healthy are especially important when you live in urban India with a stronger economic background where obesity has become a major problem. Movement also promotes mental health, encourages and fights depression, and contributes to children’s emotional development. Unfortunately, the Indian education system revolves around a fiercely competitive exam culture that puts enormous pressure on students. Physical activity ensures children’s social growth by giving them self-confidence, promoting leadership, teaching teamwork and encouraging participation and creativity. These values are difficult to learn through textbooks, but they can be practiced in a practical and enjoyable way.

Conclusion

Physical education and sports have a bright future if they are perfectly channeled. The main concern now is to understand the gaps that exist and then provide suitable programs. A well-planned systematic health plan that includes various exercise and sports activities will surely reduce the current global disease situation. It also leads to excellent performance in competitive fields in international sports.

References

1. Sports and Games (1997) in The New Encyclopedia Britannica. Or. 11, 15th edition, Chicago: Encyclopedia Britannica, page 112.
2. <https://www.sportanddev.org/>
3. Sharma, A.K., Chandra Shekhar and Sharma, O.P. (2007). Encyclopedia of Sport, Health and Physical Education. Or. I, Khel Sahitya Kendra: New Delhi, pp. 21.
4. Planning Commission (2012-2017), Report of the Task

- Force on Sports and Physical Education on the 12th Five Year Plan, Government of India, Ministry of Youth Affairs and Sports, Ministry of Sports, New Delhi, p .
5. <https://www.merriamwebster.com/>
 6. Sharma, A.K., Chandra Shekhar and Sharma, O.P. (2007). Encyclopedia of Sport, Health and Physical Education. Or. Minä, Khel Sahitya Kendra: New Delhi, s. 21.



संतुलित आहाराचा खेळाडूवर प्रभाव

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सारांश

“प्रथम सुख निरोगी शरीर” चांगले व्यक्तिमत्त्व, खेळाडू जीवनाचा आनंद, सामाजिक सहकार्य, ईश्वराचे चिंतन हे तर निरोगी व्यक्ती किंवा सुदृढ खेळाडू प्राप्त करू शकतो. जोपर्यंत एखाद्या व्यक्तीला अथवा खेळाडूला शारीरिक समस्या निर्माण होत नाहीत, तोपर्यंत शारीरिक, मानसिक स्वास्थ्यांचे मूलतत्त्व- आहार याकडे लक्ष दिले जात नाही. खेळाडूच्या खेळात चांगली कामगिरी करण्यासाठी तंत्र आणि कृती कौशल्याबरोबर संतुलित आहाराची आवश्यकता असते. एंथलेट आहारात ६५-१० कार्बोहायड्रेट्स २५-३० असावे. त्याने १२-१५ टक्क्यांपर्यंत प्रथिने घ्यावीत. याव्यतिरिक्त योग्य प्रमाणात पाणी, विटॅमिन खनिज यांचे योग्य वापर ते थेट ऊर्जा देत नाही. पण शरीराला चयापचय, तापमान नियंत्रण व निरोगी बनवण्यासाठी मदत करते. यासाठी खेळाडूला माहिती पाहिजे की क्रीडा स्पर्धांच्या आधी व दरम्यान व नंतर आपला आहार कोणत्या प्रकारचा असला पाहिजे.

प्रस्तावना

२१व्या शतकात पोहोचलेल्या दोन खेळाडूंच्या तंत्रात आणि डावपेचामध्ये अनेक बदल झाले आहेत. प्रत्येक खेळाडूला आपल्या देशाला स्पर्धेत पदके मिळवायचे असतात. त्यामुळे खेळाडूचा विकास होण्यासाठी पोषणाचे शास्त्र हे खूप विकसित झाले आहे. कारण कामगिरी ही शरीराशी निगडित असते. पोषण हे शरीराचा विकास करण्याचे शास्त्र आहे. शरीर तंदुरुस्त ठेवण्यासाठी कोणता आहार घ्यावा, कार्य करण्यासाठी आहारातूनच ऊर्जा मिळते. त्यातील घटकांची माहिती पोषणाच्या विज्ञानातून मिळते. योग्य पोषणाविषयीची माहिती ही खेळाडू किंवा त्यांच्या प्रशिक्षकाला माहिती असायला हवी. जेणेकरून भविष्यात खेळाडूचे आरोग्य आणि कामगिरी दोन्ही टिकवून ठेवता येईल.

दीर्घ पोषक (Macro Nutrient)

यामुळे शरीराला ऊर्जा मिळते व शरीराच्या विकासात यांची महत्वपूर्ण भूमिका असते.

१. कार्बोहायड्रेट, २. प्रोटीन, ३. स्निग्ध पदार्थ, ४. पाणी

लघु पोषक (Micro Nutrient)

यांची शरीराला आवश्यकता खूप कमी प्रमाणात असते.

१. जीवनसत्व, २. खनिज क्षार

पोषकतत्त्वांची खेळ प्रदर्शन करताना आवश्यकता

कार्बोहायड्रेट्स (Carbohydrates)

कार्बोहायड्रेट्स ऊर्जा प्रदान करणारा मुख्य स्रोत आहे. कार्बोहायड्रेटचे पचनाच्या वेळेस ग्लुकोजमध्ये रूपांतर होते. त्यामुळे ही ऊर्जा लवकर आणि कार्यक्षमतेने मिळते. शरीरातील यकृत आणि स्नायूंमध्ये ग्लुकोज साठवले जाते आणि ते खेळादरम्यान स्नायू आणि मेंदूला ऊर्जा प्रदान करते. जर खेळाडूच्या शरीरात कार्बोहायड्रेट्स कमी असेल तर त्याला भूक लागते आणि तो सर्वोच्च कामगिरी करू शकत नाही. खेळाडूला सरासरी व्यक्तीपेक्षा जास्त कार्बोदके आवश्यक असतात. सर्व खेळाडूंना त्यांच्या खेळाच्या प्रकारानुसार आणि वेळेनुसार वेगवेगळ्या कार्बोहायड्रेटची आवश्यकता असते.

व्यायामाची वेळ

१ ते २ तास प्रति दिवस

२ तास प्रति दिवस कार्बोहायड्रेट आवश्यकता प्रति किलो प्रति दिवस आवश्यकतेनुसार ६.८ ग्राम ते ८.१० ग्राम असते.

प्रथिने

प्रथिने देखील आरोग्य आणि शारीरिक क्रियाकलापांसाठी एक महत्वाचा घटक आहे. प्रथिने स्नायूंची दुरुस्ती करून शरीराला व्यायाम आणि खेळातून सावरण्यास मदत करते. अशा प्रकारे पुनर्प्राप्ती अनुकूल करण्यासाठी पुरेशा प्रमाणात प्रथिनांचे सेवन विचारात घेणे आवश्यक आहे. तुमचे शरीर वर्कआउट दरम्यान तुमच्या स्नायूंना बळ देण्यासाठी कार्बोदके (ग्लुकोज) सतत वापरत असते. अन्नामध्ये पुरेसे प्रथिने आणि कार्बोदके सुध्दा समाविष्ट असावे. व्यायामाची तीव्रता आणि कालावधी जास्त असल्यास, प्रथिने सेवन देखील क्रियाकलाप दरम्यान विचारात घेतले पाहिजे.

स्निग्ध पदार्थ

स्निग्ध पदार्थ हे केवळ पोषक तत्वच नाही, तर ऊर्जा निर्माण करणारे प्रमुख स्रोत आहे. दीर्घ अंतराच्या क्रीडा स्पर्धांसाठी कार्बोहायड्रेट्स नंतर स्निग्ध पदार्थ ऊर्जा देण्याचे कार्य करतात. शरीरातील

आवश्यक जीवनसत्त्वे शोषण करण्यासाठी देखील यांची गरज असते. आपण वापरत असलेली ऊर्जा २५ ते ३० टक्के प्रमाणात असावी. जास्त प्रमाणात चरबीचे सेवन केल्याने देखील खेळाडूंचे वजन वाढू शकते. त्यामुळे त्यांच्या कामगिरीवर त्याचा परिणाम होऊ शकतो. आहारात असे पदार्थ निवडले पाहिजे ज्यामध्ये सॅच्युरेटेड फॅट कमी प्रमाणात तर अनसॅच्युरेटेड जास्त प्रमाणात पाहिजे.

पाणी

पाणी हे ऑक्सिजन व हायड्रोजन पासून निर्माण होते आणि हे जीवन जगण्यासाठी अत्यंत आवश्यक आहे. परंतु शरीरात पाण्याची जास्त कमतरता असल्यास स्नायू खेचणे, चक्कर येणे, आणि मृत्यू देखील होऊ शकतो. त्यामुळे खेळाआधी आणि खेळादरम्यान तसेच खेळानंतर खेळाडूंनी योग्य प्रमाणात पाणी आणि सपोर्ट ड्रिंक्सचा वापर करणे अत्यंत आवश्यक आहे. खेळात शरीराचे तापमान वाढू लागते, ते संतुलित ठेवण्यासाठी शरीराला घाम येऊ लागतो. त्यामुळे शरीरात पाणी आणि मिठाची कमतरता भासते. प्रत्येक खेळाडू आणि खेळाडूला येणाऱ्या घामाचे प्रमाण बदलू शकते. परंतु सर्वांना तापमान संतुलित आणि कार्यक्षमतेसाठी पाण्याची आवश्यकता असते. जीवनसत्त्व आणि खनिज क्षार यामुळे शरीराला सरळ ऊर्जा मिळत नाही. परंतु शरीराला स्वस्थ ठेवण्यासाठी पेशींची दुरुस्ती आणि हाडे मजबूत करण्याचे कामही याद्वारे केले जाते. जीवनसत्त्वामुळे, खनिजांमुळे खेळांवर येणारा ताण दूर होण्यास मदत होते. याचा परिणाम खेळाडूंच्या कामगिरीवर होऊ शकतो. त्याचप्रमाणे खनिजांच्या कमतरतेमुळे शरीरात निमियासारखे आजार होऊ शकतात. त्यामुळे खेळादरम्यान खेळाडूंच्या स्नायूंना पुरेसा ऑक्सिजन मिळत नाही. त्याचा परिणाम त्यांच्या कामगिरीवर होतो. आपल्या रोजच्या आहारातून आपल्याला आवश्यक प्रमाणात जीवनसत्त्वे आणि खनिजे मिळतात. यासाठी खेळाडूला कोणताही विशेष आहार घेण्याची गरज नाही.

ऊर्जेची गरज कशी जाणून घ्यायची

प्रत्येक व्यक्तीचे काम वजन, वय आणि लिंगानुसार ठरत असते. त्यांच्यासाठी त्याप्रमाणेच ऊर्जेचे प्रमाण ठरवले जाते. यासाठी तुम्हाला बेसल मेटाबोलिक रेट माहिती असणे आवश्यक आहे. बेसल मेटाबोलिक रेट म्हणजे बी. एम. आर. हे तुम्हाला सांगते की तुमचे शरीर विश्रांती घेत असताना तुम्हाला ऊर्जेची गरज आहे. ऊर्जेचा उपयोग श्वासोच्छ्वासासाठी, रक्त गोठण्यासाठी, शरीराचे तापमान नियंत्रित करण्यासाठी, डोळ्यांच्या बाहुल्या लुकलुकण्यासाठी इ. आपले बी.

एम. आर. जाणून घेतल्यावर तुम्ही तुमच्या रोजच्या कॅलरीची गरज काढू शकता. ते कसे बघा :

(BMR) पुरुषांसाठी = $66 + (13.7 \times \text{वजन किलोग्राम मध्ये}) + (5 \times \text{ऊंचाई सें. मी. मध्ये}) - (6.8 \times \text{वय वर्षांमध्ये})$

महिलांसाठी = $655 + (9.6 \times \text{वजन किलोग्राम मध्ये}) + (1.6 \times \text{ऊंचाई सें. मी. मध्ये}) - (4.7 \times \text{वय वर्षांमध्ये})$ आपल्या कॅलरीची आवश्यकता माहिती करून घेण्यासाठी आपल्या कमजोरीला ओळखा. त्यानुसार पुढील प्रोग्रॅमट क्विटविटी फेक्टर ने गुणाकार करून घ्या.

१. **सेडॅन्टरी** : थोडा किंवा कुठलाच व्यायाम नाही.
२. **लाईट** : हलका व्यायाम १.३ दिवस / आठवडा.
३. **मोडरेट** : मध्यम व्यायाम ३.५ दिवस / आठवडा.
४. **हेवी** : कठोर व्यायाम ६.७ दिवस / आठवडा.
५. **खूपच जास्त एक्टिव** : प्रति दिवस कितीतरी तास प्रशिक्षण.

निष्कर्ष

- १) वरील विवरणाच्या नंतर या निष्कर्षावर पोहोचता येते की, प्रत्येक खेळाडूला आपले सर्वश्रेष्ठ प्रदर्शन करण्यासाठी त्याला क्रीडा कौशल्य, टेक्नीक आणि युक्ती च्या सोबत.
- २) संतुलित आहाराची देखील आवश्यकता असते. जर त्याचा आहार संतुलित नसणार तर आवश्यकतेनुसार खेळाडूला प्राप्त ऊर्जा नाही मिळणार आणि त्याचे प्रदर्शन देखील व्यवस्थित होणार नाही. सोबतच शरीराला जखमी होण्याची शक्यता खूप वाढत जाते. त्याकरिता खेळाडू ला क्रियेच्या आधी, क्रियेच्या वेळी आणि क्रियेच्या नंतर योग्य आहार घेणे आवश्यक असते.

संदर्भ सुची

- १) [https://www.fda.gov/food/Resources for You/Consumers/ucm114299.htm](https://www.fda.gov/food/Resources%20for%20You/Consumers/ucm114299.htm)
- २) Dietary Guidelines for Indians National Institute of Nutrition
- ३) Wright D, Sherman WM², Dembach R, Carbohydrate feedings before, during, or in combination improve cycling endurance performance J. ppl physiol (1985)
- ४) Jeukendrup E, Martin J. Improving cycling performance: how should we spend our time and money sports Med. 2001, 31(7):559-569



भार प्रशिक्षणामुळे कबड्डी खेळणाऱ्या खेळाडूंच्या शारीरिक क्षमतेवर पडणाऱ्या प्रभावाचा अभ्यास

चौधरी नितीन अमृत

कवयत्री बहिणाबाई चौधरी उत्तर महाराष्ट्र विद्यापीठ, जळगाव

डॉ. विरेंद्र एस. जाधव

रिसर्च गाईड, श्री संत मुक्ताई कॉलेज, मुक्ताईनगर

कवयत्री बहिणाबाई चौधरी उत्तर महाराष्ट्र विद्यापीठ, जळगाव

प्रस्तावना

प्रत्येक खेळाडूंची शारीरिक क्षमता ही वेगवेगळी असते. कोणात अधिक तर कोणात कमी ताकद असते. वेट ट्रेनिंगचे अनेक प्रकारे फायदे होतात. वेट ट्रेनिंग प्रशिक्षणाने कबड्डी खेळाडूंना आवश्यक असणाऱ्या हाताच्या मनगटातील व पायाचा पंजा घट्ट बसण्यासाठी प्रशिक्षणात उपयोग येईल.

कबड्डी हा मुख्यत्वे भारतीय खेळ आहे. थोड्या जागेत साधनाविरहीत भरपूर व्यायाम व जिद्द देणारा मनोरंजन खेळ आहे. संपूर्ण भारतभर तसेच भारताच्या कानाकोपऱ्यात तो लोकप्रिय आहे. हा खेळ विविध नावांनी लोकप्रिय आहे. भारताच्या दक्षिण तो चट्टगुडू या नावाने ओळखला जातो किंवा हू-तू-तू तर भारताच्या पूर्व भागात त्याला हादुदू पुरुषांसाठी, आणि किटकिट महिलांसाठी म्हणतात.

उत्तर भारतामध्ये मात्र हा खेळ कबड्डी या नावाने परिचित आहे. श्वास नियंत्रण, आक्रमण, चकविण्याचे कौशल्य आणि हातापायांच्या हालचाली या गोष्टी कबड्डी खेळण्यासाठी आत्मसात कराव्या लागतात. फुटबॉल आणि कुस्ती या दोन्ही खेळांची वैशिष्ट्ये यांचा समावेश असणाऱ्या या खेळात प्रतिस्पर्ध्यावर मात करण्यासाठी आक्रमणात्मक, संरक्षणात्मक कौशल्ये खेळाडूने शिकणे, संपादन करणे आवश्यक आहे.. विसाव्या शतकाच्या प्रारंभात म्हणजे पहिल्या दशकात दत्तात्रय परांजपे व सहकाऱ्यांनी 'गनिमी हुतूतू' खेळ खेळण्यास प्रारंभ केला.

शारीरिक क्षमतेची संकल्पना

फिजीकल फिटनेस या अर्थाने शारीरिक क्षमता हा शब्द प्रयोग येथे वापरला आहे. शारीरिक क्षमता असलेली व्यक्ती आपली सर्व दैनंदिन कामे न दमता व उत्साहाने पार पाडते. तसेच जीवनात येणाऱ्या अडी-अडचणींना तोंड देतांना जे शारीरिक कष्ट पडतात ते तिला जाणवत नाहीत, तसेच ती जीवनातील आनंद उपभोगण्यासाठी समर्थ असते. थोडक्यात, आयुष्यातील सर्व तऱ्हेच्या सुख-दुखांना तोंड देतांना जे शारीरिक श्रम करावे लागतात त्याचा तिला त्रास होत नाही व त्यामुळे ती आपले जीवन इतरांपेक्षा अधिक सुखाने जगू शकते.

जेव्हा तुम्हाला प्रश्न केला जातो कि, तुम्ही सुदृढ आहात का? या प्रश्नाचे उत्तर देण्यापूर्वी तुम्ही विचार करावा, सुदृढ कशासाठी?

याचाच अर्थ, प्रत्येकास आपल्या कामाच्या स्वरूपानुसार सुदृढतेची आवश्यकता असते. सर्वसामान्य व्यक्तीची शारीरिक सुदृढता आणि खेळाडूंची शारीरिक सुदृढता यात खूप फरक असतो. सर्वसामान्य व्यक्तीस आरोग्यधिष्टीत शारीरिक सुदृढतेची तर खेळाडूंना कौशल्याधिष्ठित शारीरिक सुदृढता / कारक सुदृढतेची आवश्यकता असते.

भार प्रशिक्षण इतिहास

भार प्रशिक्षण ही फार प्राचीन पद्धती आहे. भार प्रशिक्षणाचा सुरुवात १८१२ मध्ये जर्मनीच्या फेडरीक यान यांनी केला. फेडरीक यान हे जिम्नोस्टिक्सचे प्रशिक्षक होते. ही पद्धती प्रशिक्षण काळाच्या पूर्वी उपयोगात आणली जाते. ही पद्धती व्यक्तीच्या शरीराला पिळदार तसेच आकर्षक बनविण्यासाठी देखील उपयोगात आणली जाते. या प्रशिक्षणाद्वारे खेळाडूमध्ये शारीरिक क्षमतेचा विकास केला जाऊ शकतो. ही प्रशिक्षण पद्धत आठवड्यातून दिवसाला २-३ वेळा दिली जाऊ शकते. ही प्रशिक्षण पद्धत मोकळ्या जागेवर करणे फायद्याचे ठरते.

भार प्रशिक्षणात सुरुवातीस कमीत-कमी वजन व जास्तीत जास्त आवृत्ती केली जाते व हळुहळू ते वजन वाढविले जाते.

उद्दिष्टे

१) भार प्रशिक्षणामुळे कबड्डी खेळणाऱ्या खेळाडूंच्या शारीरिक क्षमतेवर पडणाऱ्या प्रभावाचा अभ्यास करणे.

परिकल्पना

भार प्रशिक्षण व्यायाम प्रकारांनी प्रशिक्षित केलेल्या व प्रशिक्षित न केलेल्या कबड्डी खेळाडूंच्या शारीरिक क्षमतेत सार्थक फरक आढळेल.

मर्यादा

- १) प्रस्तुत संशोधन हे ए. टी. झांबरे माध्यमिक विद्यालयातील कबड्डी खेळणाऱ्या मुलांकरीता मर्यादित राहील.
- २) प्रस्तुत संशोधन हे १४ ते १६ वयोगटातील कबड्डी खेळणाऱ्या मुलांकरीता मर्यादित राहील.
- ३) संशोधनासाठी निवडलेल्या विद्यार्थ्यांच्या आहार व दैनंदिन कार्यक्रमांवर मर्यादा ठेवता येणार नाही.
- ४) संशोधनासाठी वेट ट्रेनिंग या प्रशिक्षणाचा वापर करता येईल. नमुना निवड

ए. टी. झांबरे माध्यमिक विद्यालय जळगाव या शाळेतील १४ ते १६ वयोगटातील कबड्डी खेळाडूंची यादृच्छिक पद्धतीने निवड करण्यात आली.

माहिती संकलन

या संशोधन कार्यामध्ये माहिती संकलनासाठी ५० यार्ड डॅश व ६०० यार्ड रन/वॉक टेस्टचा वापर करण्यात आला. माहिती संकलनासाठी संशोधन कर्त्याने प्रथम प्रासंगिक नोंद या आधारे पूर्वचाचणी त्यानंतर ६ आठवड्यांचे प्रशिक्षण देऊन उपचारात्मक मार्गदर्शनानंतर उत्तर चाचणी घेतली.

तक्ता क्र. १

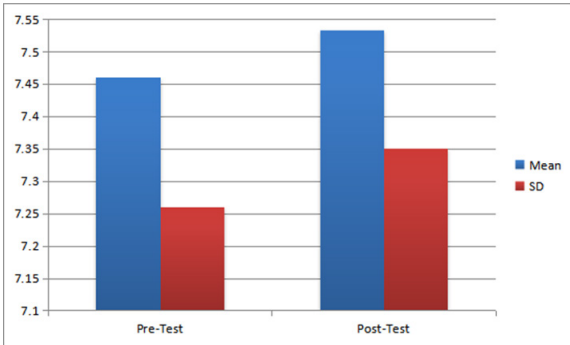
सारणी क्रमांक १ मध्ये नियंत्रित गटातील ५० यार्ड डॅशचे संख्यात्मक विश्लेषण

Control Group	Pre-Test	Post-Test	't' Value
Mean	7.460	7.534	0.017
SD	7.26	7.35	

सारणी क्र. १ मध्ये पूर्व चाचणीचा मध्यांक अनुक्रमे ७.४६० आणि प्रमाण विचलन ७.२६ आले असून उत्तर चाचणीचा मध्यांक अनुक्रमे ७.५३४ आणि प्रमाण विचलन ७.५३ आले आहे. तर 't' तर Value ही ०.०१७ आली असून प्रमाणित 't' Value मूल्य संख्याशास्त्रीय " मूल्यापेक्षा जास्त आहे. यावरून असे लक्षात येते कि, नियंत्रित गटावरती कुठल्याच बाह्य घटकांचा परिणाम झाला नाही.

आलेख क्र. १

नियंत्रित गटातील ५० यार्ड डॅशचे मध्यमान विश्लेषण व प्रमाण विचलनाचा आलेख



तक्ता क्र. २

सारणी क्र. २ मध्ये प्रायोगिक गटातील ५० यार्ड डॅश चे संख्यात्मक विश्लेषण

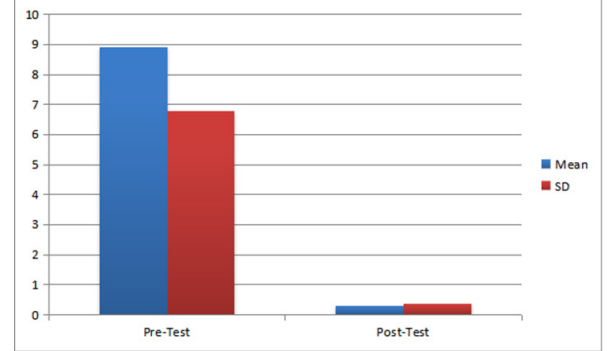
Control Group	Pre-Test	Post-Test	't' Value
Mean	8.91	0.31	23.65
SD	6.79	0.37	

सारणी क्र. २ मध्ये पूर्व चाचणीचा मध्यांक अनुक्रमे ८.९१ आणि प्रमाण विचलन ६.७९ आले असून उत्तर चाचणीचा मध्यांक अनुक्रमे ०.३१ आणि प्रमाण विचलन ०.३७ आले आहे. तर 't' तर Value ही २३.६५ आली असून प्रमाणित 't' तर Value पेक्षा संख्याशास्त्रीय

't' Value ही जास्त आली असून प्रशिक्षणाचा प्रायोगिक गटावर सकारात्मक परिणाम झाला.

आलेख क्र. २

प्रायोगिक गटातील ५० यार्ड डॅशचे संख्यात्मक विश्लेषण व प्रमाण विचलनाचा आलेख



तक्ता क्र. ३

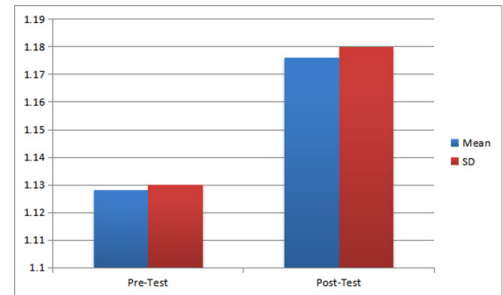
सारणी क्र. ३ मध्ये नियंत्रित गटातील ६०० यार्ड रन/वॉकचे संख्यात्मक विश्लेषण

Control Group	Pre-Test	Post-Test	't' Value
Mean	1.128	1.176	0.4963
SD	1.13	1.18	

सारणी क्र. ३ मध्ये पूर्व चाचणीचा मध्यांक अनुक्रमे १.१२८ आणि प्रमाण विचलन १.१३ आले असून उत्तर चाचणीचा मध्यांक अनुक्रमे १.१७६ आणि प्रमाण विचलन १.१८ आले आहे. तर 't' Value ही ०.४९६३ आली असून प्रमाणित 't' Value चे मूल्य संख्याशास्त्रीय 't' मूल्यापेक्षा जास्त आहे. यावरून असे लक्षात येते कि, नियंत्रित गटावरती कुठल्याच बाह्य घटकांचा परिणाम झाला नाही.

आलेख क्र. ३

नियंत्रित गटातील ६०० यार्ड रन/वॉकचे मध्यमान विश्लेषण व प्रमाण विचलनाचा आलेख



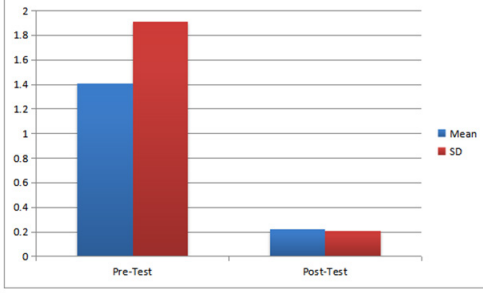
तक्ता क्र. ४

सारणी क्र. ४ मध्ये प्रायोगिक गटातील ६०० यार्ड रन/वॉकचे संख्यात्मक विश्लेषण

Control Group	Pre-Test	Post-Test	't' Value
Mean	1.41	0.22	8.92
SD	1.91	0.21	

तक्ता क्र. ४

सारणी क्र. ४ मध्ये प्रायोगिक गटातील ६०० यार्ड रन/वॉक चे संख्यात्मक विश्लेषण



निष्कर्ष

शालेय विद्यार्थ्यांना प्रशिक्षण दिल्यानंतर असे दिसून आले कि, प्रशिक्षण घेणाऱ्या विद्यार्थ्यांमध्ये सकारात्मक बदल दिसून येतात व प्रशिक्षण न घेणाऱ्या विद्यार्थ्यांमध्ये नकारात्मक बदल दिसून येतो.

- १) ६ आठवड्यांच्या प्रशिक्षणातून विद्यार्थ्यांमध्ये शारीरिक विकास दिसून आला.
- २) या प्रशिक्षण पद्धतीचा शालेय विद्यार्थ्यांवर सकारात्मक

प्रभाव दिसून आला.

- ३) या प्रशिक्षण पद्धतीचा कबड्डी खेळाडूसाठी उपयोग झाला.
- ४) नियंत्रित गटातील विद्यार्थ्यांवर कोणताही प्रभाव पडला नाही.

संदर्भ सुची

- १) श्री. बळवंत देशमुख, श्री. के. आ. जगताप, खेळ संचलन, प्रशिक्षण व अधिप्रशिक्षण प्रकाशन : संजीव देशमुख, विजयश्री प्रकाशन, नागपुर. (२००७-०८)
- २) बॉउचर चार्ल्स : फाऊंडेशन ऑफ फिजीकल एज्युकेशन, सि.व्ही. मिडबाय कंपनी सेंट लुईस - १९९७
- ३) क्लार्क हॅरिसन : ॲप्लिकेशन ऑफ मेजरमेंट ऑफ हेल्थ ॲण्ड फिजीकल एज्युकेशन, इगल वुड क्लिप्स, प्रिटोर्स हॉल - १९९७.
- ४) डोनाल्ड के. मॅथ्युस : मेजरमेंट इन फिजीकल एज्युकेशन, एम.बी. सनसेड कंपनी, लंडन आणि टीसीटोस - १९८५
- ५) गारंटी जोसेफ स्टॅटीस्टिक इन सायकॉलॉजी न्ड एज्युकेशन, मुंबई.
- ६) Hardayal Singh, (1991) Science of Sports Training. New Delhi, D.V.S. Publication.



विशेष सुदृढता प्रशिक्षणामुळे खो-खो खेळाडूंच्या कार्यक्षमतांवर होणाऱ्या परिणामांचे अध्ययन

अमर बी. हटकर

संशोधक विद्यार्थी

क. ब. चौ. उ. म. वि. जळगाव

डॉ. श्रीकृष्ण एच. बेलोरकर

संशोधन मार्गदर्शक

मु.जे. महाविद्यालय, क. ब. चौ. उ. म. वि. जळगाव

प्रस्तावना

शारीरिक शिक्षण हे शास्त्र म्हणून उदयास आलेले अर्वाचीन शास्त्र आहे. या शास्त्राचा विकास १७ व्या शतकापासून जरी झालेला असला, तरी शिक्षणशास्त्रातूनच या शास्त्राचा उगम झाल्याचे पहावयास मिळते. या शास्त्राचा विकास जसजसा होत गेला हे शास्त्र तेवढेच प्रगल्भ होत गेले. शारीरिक शिक्षणाच्या कक्षा आज खूपच रुंदावलेल्या आहेत. अनेक शास्त्रांचा उपयोजित शास्त्र म्हणून यात वापर केलेला आढळतो. अनेक संशोधने या शास्त्राच्या माध्यमातून होत आहेत. या शास्त्राची दिवसेंदिवस वाढणारी व्याप्ती बदललेली रचना, विकसित झालेल्या विविध संकल्पना, शारीरिक शिक्षण अध्यापन पद्धती, स्पर्धेच्या युगात महत्त्व प्राप्त झालेल्या आधुनिक प्रशिक्षण पद्धती, शारीरिक शिक्षणाचा बदललेला अभ्यासक्रम, त्याची ध्येये, उद्दिष्टे, शारीरिक शिक्षणाच्या प्रत्यक्ष अनुभवातून मिळणारे शिक्षण, प्रशिक्षण, शारीरिक शिक्षणाचे करावे लागणारे नियोजन, त्याचे मूल्यमापन, त्या सर्व घटकांची प्रशिक्षणार्थी, विद्यार्थी, अध्यापक यांना विस्तृत माहिती मिळणे गरजेचे आहे. काळानुरूप बदललेल्या शारीरिक शिक्षणाची संकल्पना, प्रासंगिक उदाहरणे, शारीरिक शिक्षण अध्यापन शास्त्रातील घडलेले नवीन बदल याचे ज्ञान सर्वांना व्हावे. शारीरिक शिक्षण या शास्त्राची व्यापकता लक्षात घेतांना शास्त्रातील प्रगत ज्ञान प्राप्त होईल.

कारक सुदृढतेचे घटक

- १) ताकद
- २) वेग
- ३) दमदारपणा
- ४) लवचिकता
- ५) समन्वय क्षमता

शारीरिक कौशल्ये सफाईदारपणे करता येण्यासाठी शारीरिक सुदृढतेच्या वरील कारक घटकांचा विकास होणे महत्त्वाचे असते.

अनेकदा असे दिसून येते कि, शालेय विद्यार्थ्यांमध्ये खेळाची आवड असते. पण त्यांना योग्य मार्गदर्शन मिळत नाही. १४ ते १७ वर्षांआतील मुलांमध्ये खो-खो खेळाकरीता खालील घटकांची अधिक गरज असते.

वेग, दमदारपणा, दिशाभिमुखता आणि ताकद या घटकांचा विकास प्रशिक्षणातून घडवून आणता येते. प्रत्येक खेळाडूत ताकद, वेग, दिशाभिमुखता व दमदारपणा यांची मात्रा ही वेगवेगळी असते. प्रशिक्षणाच्या माध्यमातून या घटकांचा विकास घडवून तर आणता येतो.

उद्दिष्टे

- १) या अध्यापनाचे मुख्य उद्दिष्ट्य शाळेत खो-खो खेळणाऱ्या विद्यार्थ्यांच्या शारीरिक क्षमतेवर विशेष प्रशिक्षणामुळे होणाऱ्या परिणामांचे अध्ययन करणे आहे.
- २) खो-खो खेळाडूंमध्ये प्रशिक्षण प्रक्रियेमधून दमदारपणा, ताकद, वेग व दिशाभिमुखता यांमध्ये दिसून येणाऱ्या विकासाची माहिती प्राप्त करणे.

परिकल्पना

विशेष सुदृढता प्रशिक्षणाचा खो-खो खेळाडूंच्या कार्यक्षमतांवर सार्थक प्रभाव पडेल.

व्याप्ती

- १) हे अध्ययन ओरीअन सी. बी. एस. ई. इंग्लिश मिडीयम स्कुल, जळगावच्या विद्यार्थ्यांपर्यंतच मर्यादीत आहे.
- २) हे अध्ययन १४ ते १७ वर्षांच्या विद्यार्थ्यांपर्यंतच मर्यादीत आहे.
- ३) हे अध्ययन फक्त मुलांसाठी केले गेले आहे.
- ४) या अध्ययनासाठी झक्रेट चाचणीचा उपयोग केला गेला आहे.

मर्यादा

- १) विद्यार्थ्यांच्या सामाजिक, भौतिक, आर्थिक, स्थितीवर नियंत्रण राहणार नाही.
- २) विद्यार्थ्यांच्या आहारावर नियंत्रण नाही.

संशोधन पद्धती

या विषयाचे अध्ययन करण्यासाठी जळगाव जिल्ह्यातील ओरीअन सी. बी. एस. ई. इंग्लिश मिडीयम स्कूल मधील ७ वी ८ वी ९ वी वर्गातील ३० मुलांची नमुना म्हणून निवड केली.

माहिती संकलन

वर्तमान समस्येची माहिती मिळविण्यासाठी संशोधनकर्त्याने खालील साधनांचा उपयोग केला.

खो-खो खेळणाऱ्या खेळाडूंची ताकद, दमदारपणा, दिशाभिमुखता व वेग या घटकांची आकडेवारी प्राप्त करण्यासाठी खालील चाचण्या घेण्यात आल्या.

दमदारपणा : ६०० यार्ड (४८.६७ मी.) ची रनिंग

दिशाभिमुखता : शटल रन (१६ x ६)

वेग : ७० यार्ड (४७.७२ मी)

ताकद : Standing Broad Jump उभ्याने लांब उडी

सराव वेळापत्रक

सरावासाठी निवडलेल्या विद्यार्थ्यांना ६ हप्त्यांचे प्रशिक्षण देण्यात आले. ६ हप्त्यांमध्ये प्रत्येक हप्त्याचे वेळापत्रक बनविले होते. प्रत्येक दिवशी एका घटकाचे प्रशिक्षण देण्यात येत होते. ७ दिवसांपैकी ५ दिवस प्रशिक्षण चालायचे, ६ वा दिवस हा पूर्णपणे आरामासाठी होता. प्रशिक्षण हे Simple to complex होते. विद्यार्थ्यांना अधिक थकावट होणार नाही याची सुद्धा काळजी घेण्यात आली होती. विद्यार्थ्यांमध्ये प्रगती दिसेल याप्रमाणे सराव वेळापत्रक तयार करण्यात आले होते. मुख्य वैशिष्ट्ये म्हणजे सराव वेळापत्रक हे लवचिक व प्रगतशिल होते. यामध्ये विद्यार्थ्यांचा सरावापासून ते आरामापर्यंत विचार केला गेला होता. सरावाला ३ भागात विभागले होते.

१. वार्मअप, २. मुख्य व्यायाम, ३. कुलिंग डाऊन या प्रमाणे सराव चालत असे.

निष्कर्ष

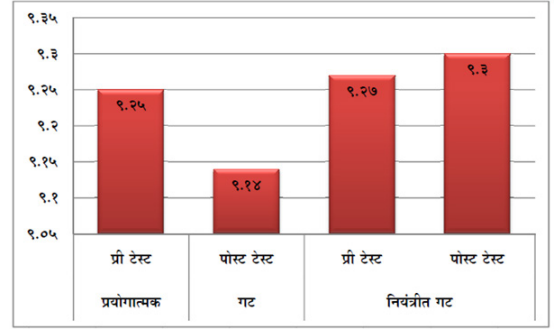
- १) हप्त्यांच्या प्रशिक्षणामधून विद्यार्थ्यांमध्ये विकास दिसून येतो.
- २) या प्रशिक्षण पद्धतीचा शालेय विद्यार्थ्यांवर प्रभाव दिसून येतो.
- ३) या प्रशिक्षण पद्धतीचा खो-खो खेळाडूसाठी उपयोग होतो..
- ४) नियंत्रित गटातील विद्यार्थ्यांवर कोणताही प्रभाव पडत नाही.

सारणी क्र. १ प्रशिक्षणाद्वारे खो खो खेळाडूंच्या वेगावर झालेल्या प्रभावाचे आलेख

गट	Mean	Sd	Se	MD	T	Table Value
प्रयोगात्मक गट	प्री टेस्ट	९.२५	१.२२	०.३२	०.११	२.५१*
	पोस्ट टेस्ट	९.१४	१.२६	०.३३		
नियंत्रित गट	प्री टेस्ट	९.२७	१.२०	०.३१	०.०३	१.०३
	पोस्ट टेस्ट	९.३०	१.१९	०.३१		

Significance at 0.05 Level of Confidence

१. प्रशिक्षणाद्वारे खो खो खेळाडूंच्या वेगावर झालेल्या प्रभावाचे आलेख

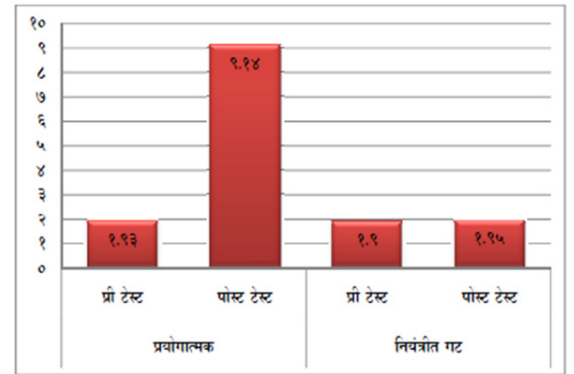


सारणी क्र. २ प्रशिक्षणाद्वारे खो खो खेळाडूंच्या दमदारपणा यावर झालेल्या प्रभावाचे आलेख

गट	Mean	Sd	Se	MD	T	Table Value
प्रयोगात्मक गट	प्री टेस्ट	१.९३	१.२९.३९	३३.४१	०.०४	२.७१*
	पोस्ट टेस्ट	१.१४	१.२६	०.३३		
नियंत्रित गट	प्री टेस्ट	१.९०	१.२९.३९	३३.४१	०.०४	०.१९
	पोस्ट टेस्ट	१.९५	१.२४.९१	३२.२५		

Significance at 0.05 Level of Confidence

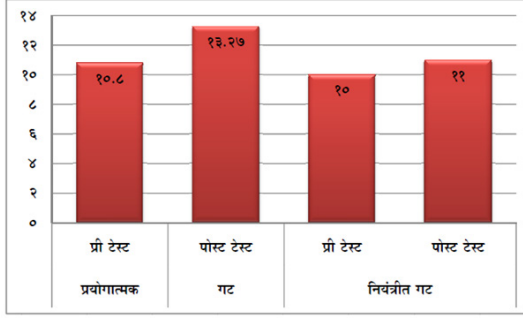
२. प्रशिक्षणाद्वारे खो खो खेळाडूंच्या दमदारपणा यावर झालेल्या प्रभावाचे आलेख



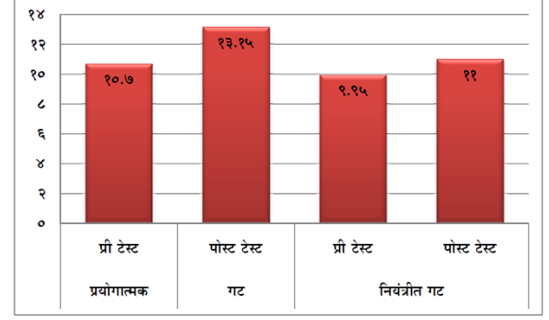
सारणी क्र. ३ प्रशिक्षणाद्वारे खो खो खेळाडूंची ताकद या घटकावर झालेल्या प्रभावाचे आलेख

गट	Mean	Sd	Se	MD	T	Table Value
प्रयोगात्मक गट	प्री टेस्ट	१०.८०	७.६७	१.९८	२.४७	५.२९*
	पोस्ट टेस्ट	१३.२७	८.९०	२.३०		
नियंत्रित गट	प्री टेस्ट	१०.००	७.६७	१.९८	०.२०	०.७६
	पोस्ट टेस्ट	११.००	७.७१	१.९९		

३ प्रशिक्षणाद्वारे खो खो खेळाडूची ताकद या घटकावर झालेल्या प्रभावाचे आलेख



४ प्रशिक्षणाद्वारे खो खो खेळाडूची दिशाभिमुखता या घटकावर झालेल्या प्रभावाचे आलेख



सारणी क्र. ४ प्रशिक्षणाद्वारे खो खो खेळाडूची दिशाभिमुखता या घटकावर झालेल्या प्रभावाचे आलेख

गट	Mean	Sd	Se	MD	T	Table Value
प्रयोगात्मक गट	प्री टेस्ट	१०.७०	७.६५	१.९८	२.४७	५.२८*
	पोस्ट टेस्ट	१३.१५	८.७२	२.१५		
नियंत्रित गट	प्री टेस्ट	९.९५	७.६५	१.९८	०.२०	०.७६
	पोस्ट टेस्ट	११.००	७.७५	१.९०		

संदर्भ सुची

- १) बॉउचर चार्लेस फाऊंडेशन ऑफ फिजीकल एज्युकेशन (The Foundation of Physical Education) सि. व्ही. मीडबाय कंपनी सेंट लुईस - १९७१.
- २) डोनाल्ड के. मॅथ्युस : मेजरमेंट इन फिजीकल एज्युकेशन (Measurement of Physical Education) एम. बी. सनडेस कंपनी, लंडन आणि टीसीटोस - १९७८.
- ३) गारंटी जोसेफ : स्टॅटिस्टिक इन सायकॉलॉजी अँड एज्युकेशन, मुंबई. (Statistic in Psychology and Foundation, Mumbai).
- ४) गोविंदराज : परफेक्ट फिजीकल फिटनेस, आय. बी. एम. पब्लिशिंग कंपनी, मुंबई १९७४ (Perfect Physical Fitness I.B.M. Company, Bombay-1974)
- ५) सिंह अजमेर: शारीरिक शिक्षण आणि ऑलम्पिक अभियान, नई दिल्ली, कल्याणी पब्लिशर्स - २००४.
- ६) क्लार्क एच. हॅरिसन : एप्लीकेशन ऑफ मेजरमेंट इन हेल्थ अँड फिजीकल एज्युकेशन, नई दिल्ली, प्रन्टिस हॉल ऑफ इंडिया-१९७६.



आहार आणि पोषण

आकाश अशोक धनगर

प्रथम वर्ष एम. पी. एड

के. सी. ई. सोसायटीचे शिक्षणशास्त्र आणि शारीरिक शिक्षणशास्त्र महाविद्यालय, जळगाव

प्रस्तावना

‘आरोग्यम् धनसंपदा’ आरोग्य हीच खरी संपत्ती. आरोग्य हे आयुष्यातील सर्वात मोठी पुंजी आहे. शरीर आणि मन यांचं आरोग्य एकमेकांशी निगडीत असते.

सुदृढ व निरोगी आयुष्याचे महत्त्व अनन्यसाधारण आहे. आपले आरोग्य निरोगी ठेवण्यासाठी पोषक आहार अत्यंत महत्त्वाचा आहे. परंतु धकाधकीच्या जीवनात आपण आपल्या आहाराकडे दुर्लक्ष करतो, त्यामुळे शारीरिक आणि मानसिक स्वास्थ्य खालावते शरीराच्या सर्व हालचाली, चयापचय क्रिया सुरळीत चालण्यासाठी आहार हे इंधनाचे काम करत असते.

बालवयात शरीराची चांगल्या रितीने वाढ होण्यास तसेच प्रौढ वयात शरीराची होणारी झीज भरून काढण्यास अन्नाची फार आवश्यकता असते. आपले मानसिक, सामाजिक आरोग्य उत्तम राहण्याकरिता आपला आहार हा पोषक घटकांनी परिपूर्ण असायला हवा.

आहारातील पोषक घटकांमुळे आपल्या शरीराची बांधणी ही उत्तमरित्या होत असते. आपला आहार म्हणजे निसर्गातून मिळणाऱ्या विविध अन्न पदार्थांचे मिश्रण होय. शरीरातील पेशींच्या पोषणासाठी कोणताही एकच पदार्थ आहारदृष्ट्या परिपूर्ण नसल्याने निरनिराळ्या पदार्थांचा अन्नात समावेश करणे भागच आहे. आपल्या दैनंदिन आहारात कर्बोदके, प्रथिने, स्निग्ध पदार्थ, जीवनसत्वे, खनिजे, पाणी यांचा समावेश असणे आवश्यक आहे.

(मुलांमधील) बालकांमधील शारीरिक पोषक आहार महत्त्वाचा पोषक आहार ‘क’ विकासासाठी घटक ठरतो. एकदंरीत हा माणसाच्या आयुष्यावर जन्मापासून मृत्युपर्यंत परिणाम करतांना आपल्याला दिसून येतो.

अन्नाचे घटक

कोणत्याही सजीव प्राण्याने अन्नरूपी पदार्थ ग्रहण केल्यानंतर त्या अन्नाचे पचन होवून शारीरिक वाढ व विकास करण्याचे कार्य करतात.

ऊर्जा उत्पन्न करणारे अन्नाचे घटक

१) कर्बोदके : सजीवांमध्ये कर्बोदके अनेक महत्त्वाची कामे पार पाडतात. कर्बोदके हे कार्बन, हायड्रोजन आणि

प्राणवायुपासून बनलेले संयुग आहे. कर्बोदके हे पुढील पदार्थापासून प्राप्त होतात - गुळ, साखर, गाजर, आंबा, सुकामेवा.

२) स्निग्ध पदार्थ : स्निग्ध पदार्थ रासायनिकदृष्ट्या लिपिड्स (Lipids) म्हणून ओळखले जाते, कर्बोदकांपेक्षा स्निग्ध पदार्थात ऑक्सिजनचे प्रमाण कमी असते. स्निग्ध पदार्थ हा पुढील पदार्थापासून प्राप्त होतात - तुप, तेल, अंडी, मासे, बदाम, काजू इ.

शरीर बांधणीचे अन्न घटक

शरीराच्या बांधणी साठी प्रथिने हा अत्यंत महत्त्वाचा अन्न घटक मानला जातो.

प्रथिने : शरीराची वाढ होण्यास, रोज होणारी झीज भरून काढण्यास आणि शरीराचे प्रतिकार सामर्थ्य सुसज्ज ठेवण्यास प्रथिने आवश्यक आहेत. प्रौढ व्यक्तीला त्याच्या वजनानुसार प्रत्येक किग्रॅ एक ग्रॅम प्रथिने रोज हवीत. बालकांना हे प्रमाण याच्या दुप्पट तिप्पट तरी हवे, कारण त्यांची सतत वाढ होत असते. स्रोत : पालेभाज्या. तुप, पनीर, अंडी, मास, बदाम, हिरव्या पालेभाज्या.

संरक्षणात्मक अन्न घटक

जीवनसत्वे आणि खनिजे यांना संरक्षणात्मक अन्न घटक म्हणून संबोधले जाते.

जीवनसत्वे : शरीरास स्वस्थ ठेवण्यासाठी नेवनात किंवा आहारात जीवनसत्वे असणे आवश्यक आहे जीवनसत्वे साधारणतः सहा प्रकारची आहेत.

१) विटामिन ए : विटामिन ‘ए’ शरीराच्या वाढीसाठी आवश्यक आहेत. हे अंडी, तूप, मासे यांपासून मिळते.

२) विटामिन ‘बी’ : याची आवश्यकता नाडी संस्था व्यवस्थीत चालण्यासाठी तसेच पेशी निर्मिती साठी आवश्यक असते, हे दुध, मांसे, हिरव्या पालेभाज्या यांपासून मिळते.

३) विटामिन ‘सी’ : हाडांच्या व दातांच्या मजबूतीसाठी विटामिन सी आवश्यक असते. हे संत्री, मोसंबी, टमाटा,

आवळा यांपासून मिळते.

- ४) **विटामिन 'डी' :** विटामिन डीच्या अभावामुळे हाडे व पाचनशक्ती कमकुवत होते. हे तुप, दुध, अंडी मासे यांपासून मिळते.
- ५) **विटामिन 'ई' :** हे शरीर वृद्धी व प्रजननासाठी आवश्यक असते. हिरव्या पालेभाज्या, शेंगदाण्याचे तेल, केळ, तुप यांपासून विटामिन 'ई' मिळते.
- ६) **विटामिन 'के' :** याच्या अभावामुळे शरीरात रक्त तयार होते. हे विटामिन पालकाचा कमी प्रमाणात तयार होते, टमाटा, कोबी यापासून मिळते.

खनिजे : खनिजांद्वारे शरीराचे संरक्षण होते, लोह सोडियम, फॉस्फोरस, क्लोरीन इ. खनिजांचे प्रकार आहेत. दुध, मांस, अंडी, हिरव्या पालेभाज्या, सोयाबीन ई. पासून मिळते.

पाणी हे जीवन जगण्यासाठी अत्यंत आवश्यक असते याद्वारे शरीराची पचनक्रिया व शरीराचे तापमान नियंत्रित ठेवते.

संतुलित आहार

प्रत्येक व्यक्तीचे आहाराचे प्रमाण कमी-जास्त असू शकते. पौष्टिक आहार कमी किंवा अधिक प्रमाणात मिळाला तरीही त्याचा दुष्परिणाम शरीरावर होतो. म्हणून निरोगी आणि तंदुरुस्त राहण्यासाठी संतुलित आहाराची आवश्यकता असते.

कामाच्या स्वरूपानुसार कॅलरीची मागणी

कामाचे स्वरूप	पुरुष ६० कि. ग्रॅ.	स्त्री ४८ कि. ग्रॅ.
साधारण हलके कार्य	२१००	१९००
साधारण कार्य	२५००	२३००
साधारण मेहनतीचे कार्य	३०००	२७००
जास्त मेहनतीचे कार्य	३९००	३२००
खेळाडूस	४५००	४०००

टिप : Indian Council of Medical Research च्या तज्ज्ञांनी

सुचविल्या आहेत.

संतुलित आहार जर आपण योग्य प्रमाणात उपयोगात नाही आणला किंवा संतुलित आहारात काही घटक कमी किंवा काही घटक जास्त प्रमाणात सेवन केले तर त्याला अपूर्ण आहार म्हटल्या जाईल.

निष्कर्ष

आपले मानसिक व शारीरिक आरोग्य निरोगी राहण्यासाठी संतुलित आहारात पौष्टिक घटकांचा समावेश असणे अत्यंत आवश्यक आहे. मानवाचे आरोग्य सुदृढ असेल तर कुठल्याही आजाराचा प्रभाव त्याच्यावर होत नाही.

तसेच रासायनिक खतांचा वापर करून तयार केलेले अन्नधान्य, फळे न पिकवलेली फळे, अन्न धान्य समाविष्ट केले पाहिजे खाता सेंद्रिय पद्धतीने आपल्या आहारात पाहिजे ज्या मुळे शरीर सुदृढ होण्यास होते व रोग प्रतिकार शक्ती वाढण्यास मदत होते.

संदर्भ सुची

- १) श्रीवास्तव अजय कुमार, शारीरिक शिक्षा युजीसी नेट/सेट, दैनिका पब्लिकेशन कंपनी, नई दिल्ली, २०१४
- २) एम. भारती, आहार संजिवनी, ग्लोबल एज्युकेशनल ट्रस्ट, नागपूर, २०१५
- ३) शारीरिक शिक्षण सेट / नेट, प्रगती बुक्स प्रा. लि., पुणे, २०११



कुपोषण

कु. गायत्री अशोक शिंदे

बी. एड. द्वितीय वर्ष

के. सी. ई. सोसायटीचे, शिक्षणशास्त्र आणि शारीरिक शिक्षणशास्त्र महाविद्यालय, जळगाव

डॉ. निलेश डी. जोशी

सहाय्यक प्राध्यापक,

के. सी. ई. सोसायटीचे, शिक्षणशास्त्र आणि शारीरिक शिक्षणशास्त्र महाविद्यालय, जळगाव

प्रस्तावना

भारताला आपण 'युवाराष्ट्र' म्हणून ओळखतो. देशाची भावी पिढी सशक्त, सुदृढ असणं महत्वाचं आहे. त्यासाठी बालवयापासूनच मुलांना पोषक आहार मिळणं आवश्यक आहे. पोषक आहाराचे सेवन केल्याने आपले आरोग्य सुधारते व शरीर निरोगी बनण्यास मदत होते. पोषक आहारामध्ये खालील पोषक तत्वांचा समावेश असणे आवश्यक आहे. प्रथिने, स्निग्ध पदार्थ, कर्बोदके, जीवनसत्वे, खनिजे आणि पाणी. अशा प्रकारे या पोषक तत्वांचा आहारात समावेश असल्यास शरीर स्वस्थ व निरोगी बनण्यास मदत होते. मात्र गरीबीमुळे लाखो मुलांना पोषक आहार मिळत नसल्यान कुपोषणाचे प्रमाण दिवसेंदिवस वाढताना दिसून येत आहे. भारतातील कुपोषणाची स्थिती चिंताजनक आहे. २०२२ सालच्या जागतिक भूक निर्देशांक सुचीत १२७ देशांमध्ये भारताचा क्रमांक १०७ आहे.

कुपोषण म्हणजे आजार नव्हे परंतु अयोग्य आहार, उपासमार, जीवनसत्वांचा अभाव यांचा परिणाम मुलांच्या शरीरावर होताना दिसून येतो. वाढ आणि विकास सर्व सामान्य पद्धतीने होण्यासाठी पोषक आहार आवश्यक असतो. पोषक आहार न मिळाल्यामुळे बालकांच्या केवळ शारीरिक वाढ आणि विकासावरच नव्हे तर बौद्धिक आकलन क्षमतेवरही विपरीत परिणाम होतो. तसेच कुपोषणामुळे संसर्गजन्य रोगांचाही परिणाम पिडीत बालकावर जलद गतीने होताना दिसून येतो. भारतात शाळापूर्व वयोगटातील ६०% पेक्षा जास्त बालकांमध्ये अॅनिमियाची लक्षणे आढळतात. शरीरात प्राणवायू सर्वत्र पोहचविण्याची जबाबदारी तांबड्या पेशींवर अवलंबून असते. त्या तयार होण्यासाठी लोह, प्रथिने, 'ब' आणि 'क' जीवनसत्वे आवश्यक असतात. त्यामुळे दैनंदिन आहारातील या घटकांच्या कमतरतेमुळे अॅनिमिया हा आजार होतो. अशा प्रकारे पोषकतत्वांच्या कमतरतेमुळे शरीराची पूर्णपणे वाढ होण्यास मदत होत नाही आणि याचाच परिणाम बालकांच्या शरीर वाढीवर दिसून येतो.

पोषक घटक

१. प्रथिने : शरीराची सतत होणारी झीज भरून काढण्यात आणि शरीराची बांधणी करण्यासाठी प्रथिने आवश्यक असतात. कडधान्ये,

दुध व दुग्धजन्य पदार्थ, मांस, अंडी, सोयाबीन अशा अन्नपदार्थांपासून आवश्यक ती प्रथिने आपणास मिळतात. योग्य प्रमाणात प्रथिने न मिळाल्यास शारीरिक व मेंदुच्या वाढीवर परिणाम होतो.

२. स्निग्ध पदार्थ : तेल, तुप, लोणी या स्निग्ध पदार्थातून आपली ऊर्जेची गरज भागते.

३. पिष्टमय पदार्थ : आपली मुख्य गरज ऊर्जेची असते, ती पिष्टमय पदार्थांमुळे भागते. त्यामुळे आपल्या आहारात भात, पोळ्या, भाकरी, फळे, तृणधान्य अशा पदार्थांचा समावेश आवश्यक असतो. मानवास संतुलित आहारापासून मिळणाऱ्या एकूण ऊर्जेपैकी जवळपास ५५% ऊर्जा पिष्टमय पदार्थांपासून मिळते.

४. जीवनसत्वे :

- अ (A) : प्रतिकार शक्ती वाढवते, दातांचे आरोग्य सुधारते, डोळ्यांचे आरोग्य अबाधित ठेवण्याचे कार्य करते. स्रोत: गाजर, दुध, हिरव्या पालेभाज्या, गाजर, गळद पिवळी फळे यातून मिळते.
- ब १ (B1) : पचन आणि शरीराचे चलनचलन सुधारते, चेतातंतूंचे व हृदयाचे कार्य नीट होण्यास मदत करते. स्रोत: दुध, मासे, मांस, तृणधान्ये, डाळी यातून मिळते.
- ब २ (B2) : मनावरील ताण कमी करते, पिष्टमय पदार्थांच्या पचनासाठी मदत करते. स्रोत: अंड्यातील पिवळा बलक, हिरव्या पालेभाज्या, दूध.
- ब ९ (B9) : शरीर वाढीसाठी उपयुक्त ठरते. स्रोत: पपई, कीवी, गडद हिरव्या पालेभाज्या.
- ब १२ (B12) : पेशी निर्मितीसाठी आवश्यक, लाल पेशी तयार करण्यात महत्वाचा सहभाग. स्रोत: दुग्धजन्य पदार्थ, मांस.
- क (C) : प्रतिकार शक्ती वाढवते, दातांचे व हिरड्यांचे आरोग्य सुधारते, अल्सर निर्मितीस आळा घालते. स्रोत: आंबट चवीची फळे.
- ड (D) : कॅल्शियम पचविण्यास मदत करते, हाडांच्या वाढीसाठी उपयुक्त. स्रोत: सूर्यप्रकाश, दूध, मासे, अंडी,

लोणी.

- **इ (E) :** पेशींमध्ये चयापचय क्रिया सुरळीत करते, रक्तात गुठल्या होण्यास प्रतिबंध करते. स्रोत: सोयाबीन, पालक, पुर्ण धान्ये, सूर्यफूल, भोपळा.
- **के (K) :** रक्त गोठणे व शरीरात रक्त प्रवाह संतुलित राहण्यास मदत करते. स्रोत: हिरव्या पालेभाज्या, मोड आलेले कडधान्य, सोयाबीन.

५. खनिजे : शरीरातील सर्व प्रक्रिया सुरळीत चालण्यासाठी खनिजांची आवश्यकता असते.

- **लोह :** शरीराच्या सर्व भागांपर्यंत ऑक्सिजनचे वहन करते. पेशींमधील महत्वाच्या कार्यांना चालना देते. स्रोत: मांस, सुकामेवा, हिरव्या पालेभाज्या यांतून मिळते.
- **कॅल्शियम व फॉस्फोरस :** हाडांच्या व दातांच्या जडणघडणीसाठी आवश्यक असते, मज्जातंतु तसेच स्नायूंचे कार्य सुरळीत ठेवते. स्रोत: दुध, दुग्धजन्य पदार्थ, हिरव्या पालेभाज्या, अंड्यातील पिवळा बलक.
- **आयोडीन :** शरीरातील होणाऱ्या रासायनिक क्रिया गतिमान करणे, वाढीचे नियंत्रण ठेवते. स्रोत: मीठ, मनुका, समुद्रातून मिळणारे पदार्थ यातून मिळते.
- **सोडियम व पोटॅशियम :** स्नायूंचे आकुंचन, पाण्याचे संतुलन राखते. स्रोत: पालेभाज्य, मीठ, फळे, डाळी, धान्याचे मोड यातून मिळते.

६. पाणी : पूर्ण वाढ झालेल्या माणसाच्या वजनाच्या ५५ ते ६५% वजन हे पाण्याचे असते. पाण्याविना शरीर फार गुंतागुंतीचे होते. अन्न पदार्थ ग्रहण करणे व बाहेर टाकणे यासाठी सुद्धा पाण्याचा उपयोग होतो, तसेच शारीरिक तापमान समतोल राखण्यासाठी पाण्याचा उपयोग होतो.

कुपोषणाची लक्षणे

१. कुपोषणाचे प्राथमिक लक्षण म्हणजे अत्यंत कमी कालावधीत बालकाचे वजन वेगाने कमी होणे.
२. वयाच्या मानाने कमी उंची असणे.
३. स्नायु कमकुवत होणे.
४. कुपोषणामुळे सतत आजारी पडत असल्याने शारीरिक व मानसिक वाढ पूर्ण न होणे.
५. श्वसनास त्रास होणे.
६. नेहमी थकल्यासारखे वाटणे.
७. अंगावर सूज येणे.
८. भुक मंदावणे, चेहरा निस्तेज होणे, नखांवर पांढरेपणा जाणवतो.

कुपोषणाची कारणे

१. **आत्यंतिक गरिबी :** विकसनशील देशांमध्ये लोकसंख्येला अनेक समस्यांना सामोरे जावे लागते. त्यापैकीच एक म्हणजे 'कुपोषण', गरिबीच्या परिस्थितीमुळे स्वस्त दरामध्ये अन्नधान्य उपलब्ध न होऊ शकल्यामुळे कुपोषणाला बळी पडल्याचे प्रमाण वाढल्याचे दिसून येते.

२. **विशिष्ट आजार :** बालकांमध्ये विशिष्ट पोषक विषयक तत्वांच्या कमतरतेमुळे, रक्तक्षय, बेरीबेरी यांसारखे आजार बळावण्याची दाट शक्यता असते. आजारांमुळे अपुरा व निकस आहार घेतल्यामुळे कुपोषणाची समस्या उद्भवते.
३. **मनोविकार :** सद्य स्थितीत बालकांमध्ये डिप्रेशन व इतर मानसिक आजारांचे प्रमाण वाढत असून त्यामुळे खाण्यापिण्याकडे दुर्लक्ष होऊन कुपोषणाचे प्रमाण वाढत आहे.
४. **सकस आहाराच्या अभावामुळे :** जीवनसत्वे, खनिजे तसेच पुरेसे अन्न सेवन न केल्यामुळे कुपोषणाची समस्या उद्भवते.

कुपोषणावरील उपचार

१. कुपोषणावर मात करण्यासाठी पुरक पोषक आहार देणे व वेळीच आरोग्य सेवा पुरविणे महत्वाचे ठरते.
२. कुपोषणाचे प्रमाण कमी असेल तर घरीच सुयोग्य आहार घेण्याचा सल्ला दिला जातो, परंतु गंभीर प्रमाणात कुपोषण असेल तर हॉस्पिटलमध्ये राहून उपचार घेण्याची गरज भासू शकते.
३. लहान बालकांमधील कुपोषणासाठी योग्य प्रमाणात टॉनिक, उत्तम आहार, वेळोवेळी शारीरिक तपासणी असे उपचार केले जातात.
४. कुपोषण होऊ नये म्हणून आहारात पोषक तत्वांचा समावेश करावा.
५. पोषक विषयक घटकांचा शालेय अभ्यासक्रमात समावेश: शालेय जीवनात विद्यार्थी दशेतील बालकांना पोषक आहारचे महत्त्व समजावून सांगण्यासाठी पोषक विषयक घटकांचा शालेय अभ्यासक्रमात समावेश करण्यात आला आहे.
- **इयत्ता पहिली :** 'खेळू, करू, शिकू' या पुस्तकातून विद्यार्थ्यांना आहाराचे महत्त्व समजावण्यात आले आहे.
- **इयत्ता दुसरी :** 'खेळू, करू, शिकू' या विषयाच्या पाठ्यपुस्तकात आरोग्य व शारीरिक शिक्षणाचे महत्त्व विद्यार्थ्यांना कळावे व त्यातून त्यांना पोषक घटकांची माहिती व्हावी यासाठी 'आरोग्य' या पाठातून आहाराविषयी माहिती देण्यात आली आहे.
- **इयत्ता तिसरी :** परिसर अभ्यासातून 'आपली अन्नाची गरज', 'आपला आहार', स्वयंपाक घरात जाऊया या पाठांच्या माध्यमातून पोषक घटकांची माहिती देण्यात आली आहे.
- **इयत्ता चौथी :** 'अन्नातील विविधता', 'आहाराची पौष्टिकता', 'मोलाचे अन्न' या पाठांतून आहारा विषयी माहिती देण्यात आली आहे.
- **इयत्ता पाचवी :** परिसर अभ्यास या पुस्तकातून 'अन्नघटक' या पाठतून आपल्या आहारात कोणकोणते अन्न घटक समाविष्ट असावेत या विषयी माहिती देण्यात

आली आहे.

- **इयत्ता सहावी :** सामान्य विज्ञान या पाठ्यपुस्तकातून 'पोषण आणि आहार या विषयी माहिती देण्यात आली आहे.
- **इयत्ता सातवी :** 'सजीवांतील पोषण', 'अन्नपदार्थांची सुरक्षा' या पाठांतून सामान्य विज्ञान विषयाच्या पाठ्यपुस्तकातून विद्यार्थ्यांना मनुष्यच नाही तर सजीव वनस्पतींना देखिल वाढीसाठी पोषक द्रव्यांची आवश्यकता असते तसेच शरीराच्या वाढीसाठी आवश्यक अन्नघटक ज्या पदार्थांमधून मिळतात त्या अन्नपदार्थांची सुरक्षा कशा पद्धतीने केली जाते या विषयी माहिती देण्यात आली आहे.
- **इयत्ता आठवी :** सामान्य विज्ञान या पुस्तकात 'आरोग्य व रोग' या पाठातून आपले आरोग्य निरोगी राहण्यासाठी आपल्या आहारात पोषक तत्वांचा समावेश केला पाहिजे याविषयी सांगण्यात आले आहे.
- **इयत्ता नववी :** विज्ञान आणि तंत्रज्ञान या पाठ्यपुस्तकात अन्नपदार्थांमध्ये मिसळले जाणारे खाद्यरंग यांविषयी माहिती देण्यात आली आहे. खाद्य पदार्थ नैसर्गिक व कृत्रिमही असतात. कृत्रिम खाद्यरंगाचे अतिवापर हे आरोग्यास घातक ठरू शकते, त्याच्या अति सेवनामुळे लहान मुलांमध्ये ADHD (Attention Deficit Hyperactivity Disorder) सारखे आजार उद्भवू शकतात.

निष्कर्ष

भारतातील कुपोषणाची स्थिती चिंताजनक आहे. बालकांमधील वाढत्या कुपोषणामुळे केवळ त्यांच्या शारीरिक वाढीवरच नव्हे तर मानसिक, बौद्धिक स्थितीवर देखील परिणाम झाल्याचे दिसून येते. त्यामुळे कुपोषणाची समस्या मुळापासून नष्ट करण्यासाठी शालेय जीवनातील मुलांना पोषक आहाराचे महत्व समजावून सांगणे अत्यंत गरजेचे आहे. पोषक आहाराचा समावेश आपल्या नियमित आहारामध्ये करण्यासाठी कोणकोणत्या पदार्थांचे सेवन केले पाहिजे व कोणत्या पदार्थांचे सेवन करणे टाळले पाहिजे यांविषयी मार्गदर्शन करणे महत्वाचे ठरेल.

संदर्भ सुची

- <https://www.manachetalks.com/21137/kuposhanachikarne-lakshane-upay/>
- इयत्ता पहिली: 'खेळू, करू, शिकू', २०१८, पृष्ठ क्र. ४
- इयत्ता दुसरी: 'खेळू, करू, शिकू', २०१९, पृष्ठ क्र. ४
- इयत्ता तिसरी: 'परिसर अभ्यास', २०१४, पृष्ठ क्र. ६९, ७८, ८१
- इयत्ता चौथी: 'परिसर अभ्यास भाग-१', २०१४, पृष्ठ क्र. ३६, ४२, ५०
- इयत्ता पाचवी: 'परिसर अभ्यास भाग-१', २०१५, पृष्ठ क्र. ९६
- इयत्ता सहावी: 'सामान्य विज्ञान', २०१६, पृष्ठ क्र. ५०
- इयत्ता सातवी: 'सामान्य विज्ञान', २०१७, पृष्ठ क्र. २६, ३४
- इयत्ता आठवी: 'सामान्य विज्ञान', २०१८, पृष्ठ क्र. ६
- इयत्ता नववी: 'विज्ञान आणि तंत्रज्ञान', २०१७, पृष्ठ क्र. १५८



जीवनशैलीचा आरोग्यावर होणाऱ्या परिणामांचा अभ्यास

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गोषवारा

‘शरीरमाद्यमखलुधर्मसाधनम्’

‘Sound mind in a sound body’ निरोगी शरीरातच निरोगी मन वास करते. असे म्हटले जाते. ते खरेच आहे, शाळेत येणारे सर्वच विद्यार्थी एकाच प्रकारचे नसतात, शारीरिक, मानसिक, बौद्धिक सामाजिक फरक विद्यार्थ्यांत दिसून येतात शाळा ही मुलांच्या कोऱ्या मनःपटलावर संस्कार मूल्ये रुजवण्याचे केंद्र आहे. म्हणून शाळेला समाजाचे छोटे रूप म्हटले जाते. समाजातील प्रत्येक व्यक्तीला आपल्या आरोग्याची आणि स्वास्थ्यपूर्ण जीवनशैलीची गरज असते. जीवनशैलीचा शारीरिक, मानसिक, सामाजिक स्वास्थ्यावर विविध घटक कसे कारणीभूत ठरतात, त्याचबरोबर शालेय परिसराच्या आरोग्यामध्ये शाळा समाजाचे छोटे रूप, वर्ग खोलीची स्वच्छता, शालेय परिसराची स्वच्छता व स्वच्छतागृहाचा इत्यादींचा समावेश यासाठी शिक्षकांनी-विविध उपक्रमांचे आयोजन, ते विविध उपक्रम कोणते? तसेच आधुनिक तंत्रज्ञानाचा वापर, इत्यादी बाबींच्या विवेचनातून संतुलित जीवनशैलीचा अंगीकार करून उत्तम आरोग्य कसे मिळवता येईल? या हेतूने संशोधकाने हे सिद्ध करण्यासाठी प्रस्तुत समस्येची निवड केलेली आहे.

प्रास्ताविक

आरोग्य हे आपल्यासाठी अतिशय महत्वाचे असते. आरोग्य म्हणजे धनसंपदा होय. पौष्टिक आहार, शारीरिक क्रिया, मानसिक ताण, व्यक्तिमत्त्व व वर्तन इत्यादी बाबींचा आरोग्यावर परिणाम होत असतो. आरोग्य व्यक्तीच्या शरीरावर परिणाम करत असते. उदा. आरोग्यदायी जीवनशैली असेल तर हृदयासंबंधी आजार टाळता येऊ शकतात. लेविस (Lewis 1987) च्या मते चांगल्या आरोग्यामुळे, चांगले जीवन लाभते, आणि याचा प्रभाव शारीरिक, शैक्षणिक, भावनिक व आध्यात्मिक परिस्थितीवर होत असतो.

मानवी आरोग्य म्हणजे जैविक, मानसिक व सामाजिक घटकांचे मिश्रण होय. (Zlate-2010) जीवनशैली हा जैविक व पर्यावरण विषयक घटकांसोबत व्यक्तीच्या जीवनाचा महत्वाचा घटक आहे. जागतिक आरोग्य संघटनेच्या मते (WHO) आरोग्य म्हणजे- शारीरिक आरोग्य

व सामाजिक दृष्ट्या पूर्णतः सुदृढ असणे होय. केवळ रोगविरहित असणे म्हणजे आरोग्य नव्हे.

संशोधनाची उद्दिष्टे

- १) जीवनशैलीचा शारीरिक आणि मानसिक स्वास्थ्यावर होणारा परिणाम अभ्यासणे.
- २) जीवनशैलीचा सामाजिक स्वास्थ्यावर होणारा परिणाम अभ्यासणे.
- ३) आधुनिक तंत्रज्ञानाच्या वापराचा जीवनशैलीवर होणारा परिणाम अभ्यासणे

संशोधनाची साधने

प्रस्तुत संशोधन हे दुय्यम स्त्रोतांवर आधारित आहे. या संशोधनासाठी प्रकाशित, अप्रकाशित, संदर्भ पुस्तके, मासिके, वर्तमानपत्रे आणि इंटरनेटचा वापर करण्यात आला आहे.

जीवनशैलीचा शारीरिक आणि मानसिक स्वास्थ्यावर होणारा परिणाम

विद्यार्थ्यांचा जीवनशैलीचा अभ्यास हेच प्रस्तुत संशोधनाचे उद्दिष्ट होय. प्रस्तुत संशोधनातून हेही माहीत करून घेण्याचा प्रयत्न होत आहे की विद्यार्थ्यांनी जर शारीरिक व्यायाम अनावश्यक आहार टाळणे, स्वच्छता इत्यादी बाबींवर लक्ष केंद्रित केले तर, त्यांच्या आरोग्यावर कसा सकारात्मक परिणाम होतो ते अभ्यासणे.

एकविसाव्या दशकात जीवनशैली हा आरोग्यासाठीचा महत्वाचा विषय म्हणून संशोधकाला या विषयात गोडी निर्माण झालेली आहे. जागतिक आरोग्य संघटनेच्या मते आरोग्याशी निगडित ६० टक्के घटकाचा प्रत्यक्षरीत्या जीवनशैलीशी सहसंबंध येत असतो. दशलक्ष लोक आरोग्यास हानिकारक असा आहार घेत असतात, म्हणून ते वेगवेगळ्या आजारांनी ग्रस्त असतात. प्रसंगी त्यांना मृत्यू देखील येऊ शकतो. अशा आरोग्य अशा आरोग्यास हानिकारक जीवनशैलीमुळे अति वजन, उच्च रक्तदाब, हृदयविकार यासारखे आजार उद्भवतात. जीवनशैली व आरोग्य या दोघांचा एकमेकांशी खूप जवळचा संबंध असतो यावर विचार करणे खूप गरजेचे आहे.

आज लोकांच्या जीवनशैलीमध्ये मोठ्या प्रमाणात बदल झालेले

आहे अपौस्टिक आहार, धूम्रपान, दारूचे अति सेवन, इत्यादी घटकांचा काही लोकांच्या जीवनशैलीचा अविभाज्य भाग बनलेला आहे. याखेरीज लोकांसमोर नवीन तंत्रज्ञान, आंतरजाल यासारख्या समस्या येऊन ठेपलेल्या की, ज्यामुळे शारीरिक व मानसिक ताण उद्भवत असतात.

शारीरिक परिश्रमाच्या अभावामुळे मुलांचे वजन वाढलेले आहे (Canning Etal-2004, Elgar Etal-2005) जीवनशैली सुधारावी, यासाठी ज्या क्रियांचा समावेश होत असतो, या क्रियांवर लक्ष केंद्रित केल्यामुळे व्यक्तीचे सामाजिक स्वास्थ्य सुधारते. तसेच व्यक्तीच्या शारीरिक, सामाजिक, आध्यात्मिक, मानसिक व बौद्धिक विकास व्हायला मदत होत असते. (Ebem, 2007)

प्रस्तुत संशोधनानुसार जीवनशैलीचा शारीरिक व मानसिक स्वास्थ्यावर खूप मोठा प्रभाव झालेला दिसून येतो, जीवनशैलीतील बदल आरोग्यावर परिणाम करत असतात जसे की

BMI : आहार हा जीवनशैलीतील एक महत्वाचा घटक आहे. अयोग्य आहारामुळे स्थूलपणासारख्या नको असलेल्या आजाराला आमंत्रण दिले जाते. शहरी- जीवनशैलीमुळे लोक अपायकारक अन्न पदार्थ सेवनाकडे आकर्षिले गेले आहे .त्यातून हृदयासंबंधीचे आजार उद्भवतात.

व्यायाम : योग्य आहार व व्यायाम या दोघांच्या संयोगामुळे शारीरिक व मानसिक आरोग्याचा समतोल साधता येतो.

झोप : झोपे शिवाय आयुष्याच नाही. पुरेशी झोप नसल्याने, मानसिक व शारीरिक स्वास्थ्य बिघडते. चांगल्या स्वास्थ्यासाठी पुरेशी झोप आवश्यक आहे.

लैंगिक वर्तन : सुदृढ आरोग्यासाठी लैंगिक संबंधाची आवश्यकता असते. लैंगिक संबंधातील असमतोल वृत्तीमुळे मानसिक व शारीरिक स्वास्थ्य बिघडते.

पदार्थ दुरुपयोग (substance abuse) : व्यसन हे अयोग्य जीवनशैलीचा भाग आहे. धूम्रपान, गुटखा खाणे, इत्यादी व्यसनमुळे श्वसन, कॅसर, मेंदूज्वर सारखे आजार उद्भवतात.

औषधांचा गैरवापर (Medication abuse) : डॉक्टरांचा सल्ला न घेता औषध घेणे हा देखील आताच्या आधुनिक जीवनशैलीचा भाग झालेला आहे. याने देखील आरोग्यावर घातक परिणाम होतात.

जीवनशैलीचा सामाजिक स्वास्थ्यावर होणारा परिणाम अभ्यासणे

मनुष्य हा समाज प्रिय प्राणी आहे समाजाशिवाय व्यक्ती जीवन जगू शकत नाही. व्यक्तींना सामाजिक जीवन जगण्याचे धडे मिळण्याचे एकमेव ठिकाण म्हणजे शाळा. शाळा ही मुलांच्या कोऱ्या मन पटलावर संस्कार मूल्य रुजवण्याचे केंद्र आहे म्हणून शाळेला समाजाचे छोटे रूप म्हटले जाते .

सामाजिक आरोग्य एखाद्या व्यक्तीचे आरोग्य चांगले राहण्यास ती व्यक्ती स्वतः तिच्या आजूबाजूचा समाज आणि सभोवतालचे पर्यावरण यांचा एकत्रित हातभार असतो.

अनेक व्यक्तीचा मिळून समाज बनत असतो माणूस हा समाजप्रिय प्राणी आहे तो समाजाशिवाय राहू शकत नाही माणूस समाजातील

घटकांची विविध नाती प्रस्थापित करतो त्यांच्याबरोबर जीवन जगणे त्याला आवडते समाजातील विविध घटकातून त्याला प्रेरणा मिळतात शाबासकी मिळते त्यातून त्यांची जीवन घडते अशाप्रकारे व्यक्तीचे समाजाशी व समाजाचे व्यक्तीशी अतूट संबंध असतात व्यक्ती समाज घडविते व समाज व्यक्तीला मोठे करतो वैयक्तिक आरोग्य अनुभवता अनुभवता व्यक्ती सामाजिक आरोग्याला स्पर्श करित असतो ह्या सामाजिक जीवन शैलीची संकल्पना शिक्षकांनी विद्यार्थ्यांना समजावून दिली पाहिजे.

समाजाच्या कक्षेतच व्यक्तीला वावरावे लागते व्यक्तीच्या आरोग्याचा व अनारोग्याच्या समाजातील अन्य घटकांवर परिणाम होतो. सामाजिक आरोग्य आणि वैयक्तिक आरोग्य हे एकमेकांवर अवलंबून असते या दोघांवर आर्थिक पर्यावरणीय घटक परिणाम करित असतात आजच्या काळात निरोगी व्यक्ती ही सामाजिक संपन्नता आहे आपल्या देशात सार्वजनिक आरोग्य राखण्याकरिता विविध आरोग्य सेवा संस्थांची स्थापना करण्यात आल्या आहेत विद्यार्थ्यांनी उद्याचे भावी व सुजाण नागरिक या नात्याने जाणीवपूर्वक प्रयत्न करून या संस्थांना स्वच्छता राखण्यास मदत करणे आवश्यक आहे हे शिक्षकांनी विद्यार्थ्यांना पटवून द्यावे. उदा.लायन्स क्लब, रोटरी क्लब, जागतिक आरोग्य संघटना, आंतरराष्ट्रीय रेडक्रॉस संस्था, युनिसेफ संस्था, रक्तपेढी संस्था, इत्यादी.

शालेय स्तरावर विद्यार्थ्यांमध्ये सामाजिक आरोग्याची जाणीव निर्माण होण्याची आज नितांत गरज आहे. शालेय परिसराच्या आरोग्यामध्ये शाळा समाजाचे छोटे रूप, वर्ग खोलीची स्वच्छता, शालेय परिसराची स्वच्छता, व स्वच्छतागृहाचा, इत्यादींचा समावेश होतो.सामाजिक आरोग्य सुधारण्यासाठी सामाजिक जीवनशैलीच्या विकासासाठी शिक्षकाची भूमिका महत्वाची आहे. त्यासाठी शिक्षकाने विविध उपक्रमांचे शाळेमध्ये आयोजन केले पाहिजे. उदा. सार्वजनिक स्वच्छतेची जाणीव करून देणे, पाण्याचा काटकसरीने वापराची सवय लावणे, वनसंपदेचे महत्त्व पटवून देणे, वैयक्तिक विकासास मदत करणे, याचबरोबर

समाजसेवा : यातून ग्राम स्वच्छता, कचरा निर्मूलन करणे, पाण्याचा योग्य वापर, आरोग्यास पोषकबाबी इत्यादी सारख्या बाबी समाजसेवेतून साध्य होऊ शकतात. त्यामुळे विद्यार्थ्यांत सामाजिक आरोग्याची जाणीव निर्माण होईल.

विविध शिबिरांचे आयोजन : जेणेकरून शिक्षणासोबत सामाजिक विकास महत्वाचा आहे. यातून समाजविघातक बाबींचे काय दुष्परिणाम आहेत हे शिबिरातून विद्यार्थ्यांमध्ये बिंबविता येईल. तसेच चांगल्या बाबींचे सुद्धा मार्गदर्शन करावे साथीच्या आजाराची माहिती द्यावी, यासारख्या उपक्रमातून सामाजिक जीवनशैली विद्यार्थ्यांमध्ये विकसित होईल.

सहलीचे आयोजन, सामूहिक खेळ, पथनाट्य, सांस्कृतिक कार्यक्रम इत्यादीं उपक्रमांद्वारे विद्यार्थ्यांमध्ये सामाजिक जीवनशैलीचा विकास होण्यास मदत होईल.

आधुनिक तंत्रज्ञानाचा वापर (application of modern technologies) : आधुनिक तंत्रज्ञानाने मानवी जीवन सुखकर झालेले आहेत, परंतु या तंत्रज्ञानाच्या दुरुपयोगाने घातक परिणाम ओढवण्याची

परिस्थिती येऊ शकते. उदा. रात्री उशिरापर्यंत संगणक, भ्रमणध्वनी हाताळणे, मुलांच्या चेतासंस्थेवर व दृष्टीवर परिणाम होत असतो.

सारांश

आरोग्यदायी जीवनशैली हाच आरोग्य सुदृढ ठेवण्यासाठी चा एकमेव मूलमंत्र आहे. अशी एक धारणा आहे की ज्यामध्ये अनेक घटकांचा समावेश असतो जसे की- दारू, तंबाखू व अयोग्य आहार टाळणे होय. नियमितरीत्या समूहामध्ये किंवा वैयक्तिक व्यायाम करणे, तसेच योग्य आहार, फावल्या वेळात योग्य त्या क्रिया करणे, आहाराचे नियम पाळण्यास, आरोग्य सुदृढ राहते. आरोग्यदायी जीवनशैली व आरोग्य यांचा एकमेकांशी खूप जवळचा संबंध असतो दोघेही एकाच नाण्याच्या बाजू आहेत.

सामाजिक आरोग्य हे वैयक्तिक आरोग्याचे विस्तारित रूप आहे सामाजिक आरोग्य हे आपल्या सभोवताली असणाऱ्या सर्वांशी संबंधित असते सामाजिक आरोग्य रक्षणामुळे सर्वांचे आरोग्य चांगले राहण्यास मदत होते शिक्षकांची सामाजिक आरोग्याच्या उपेक्षित विचार उपयोजित कसा होईल त्यामुळे अन आरोग्य कसे टाळेल शासकीय आरोग्य संस्थांच्या कार्याला कसा हातभार लावता येईल म्हणजे विद्यार्थ्यांत सामाजिक जीवनशैलीचा, स्वास्थ्यावर होणाऱ्या परिणामांची जाण निर्माण होऊन सर्वांकडून तो उपयोजित होईल यावर भर देणे आवश्यक आहे. तसेच शांत झोप, आहार, व्यायाम, व्यसनमुक्त जीवन, सध्याच्या आधुनिक तंत्रज्ञानाचा वाजवी वापर करून, संतुलित जीवनशैलीचा अंगीकार करत, उत्तम आरोग्य मिळवता येईल.

संदर्भ सुची

- करंदीकर सुरेश, (१९९७) 'शैक्षणिक मानसशास्त्र' फडके प्रकाशन, कोल्हापूर.
- कुलकर्णी क, वि. (१९७७) 'शैक्षणिक मानसशास्त्र', विद्या प्रकाशन पुणे.
- खरात आ. पा., (१९८८) 'प्रगत शैक्षणिक मानसशास्त्र' विद्या

प्रकाशन पुणे.

- जगताप ह. ना. (१९९५), 'शैक्षणिक मानसशास्त्र', नित्य नूतन प्रकाशन, पुणे.
- दांडेकर वा. ना. (१९७२) 'शैक्षणिक व प्रायोगिक मानसशास्त्र' श्रीविद्या प्रकाशन, पुणे.
- देशमुख बळवंत, (२००८) 'आरोग्य शिक्षण' नलिनी प्रकाशन, नागपूर.
- १. Dunn AL, Anderson RE, Jakicic JM. (1998). Lifestyle physical activity interventions: history, short and long term effects and recommendations. *m J Preven Med*, 15(4): 398 412. PubMedGoogle Scholar
- २. Farhud DD, Malmir M, Khanahmadi M. (2015). Happiness as a healthy life style. *Iranian cademy of Medical Science*. (In press)Google Scholar
- ३. Hanawi, S. A. 1, Saat, N. Z. M. 2*, Zulkafly, M. 2, Hazlenah, H. 3, Taibukahn, N. H. 2, Yoganathan, D. 2, Abdul Rahim, N. N. 2, Mohd Bashid, N. . 2, bdul ziz, F. . 2, Low, F. J. 2, "Impact of a Healthy Lifestyle on the Psychological Well-being of University Students' *International Journal of Pharmaceutical Research llied Sciences*, 2020, 9(2):1-7
- ४. Ioan Sabin SOP, Marcel POMOHCI, DEVELOPING HEALTHY LIFESTYLE OF STUDENTS THROUGH THE PRCTICE OF SPORT CTIVITIES *Land Forces cademy Review Vol. XXIII, No 3(91), 2018: 207-216*
- ५. Karimi M?, Heidarnia, Ghofranipur F. (2010). Effective factors on using medication in aging by using healthy believe. *J rak Med Uni*, 14(5); 70 78. Google Scholar
- ६. Kamakhya Kumar, Impact of Lifestyle on Health *Iran J Public Health*. 2015 Nov; 44(11): 14421444
- ७. Mozaffarian D, Hao T, Rimm EB, Willett W, Hu FB. (2011). Changes in diet and life style and long term weight gain in women men. *N Eng Med J*, 364: 23922404. PMC free article PubMedGoogle Scholar



खेळाडू आणि क्रीडा पोषण

प्रस्तावना

मुलांच्या शारीरिक आणि मानसिक आरोग्यासाठी त्यांनी शारीरिक क्रियाकलापांमध्ये सहभाग घेणे आवश्यक आहे. शारीरिक उपक्रमांमध्ये किंवा विविध खेळांमध्ये भाग घेणाऱ्या मुलांना इतर सामान्य मुलांपेक्षा पोषक तत्वांची जास्त गरज असते. मात्र अशा मुलांना योग्य माहितीच्या अभावे योग्य ते पोषण मिळत नाही. त्याचप्रमाणे विविध प्रसारमाध्यमांद्वारे शालेय मुलांना लक्ष्य करून दिली जाणारी खाद्यपदार्थांबद्दलची चुकीची माहिती त्यांच्या जीवनशैलीत घातक ठरू शकते. लेखाचा उद्देश विविध खेळांमध्ये भाग घेणाऱ्या मुलांच्या पोषण विषयक गरजांचा ऊहापोह करणे तसेच शारीरिक क्रियाकला किंवा खेळांमध्ये सहभाग घेताना योग्य पोषणाचे व पोषक तत्वांचे महत्त्व आणि कार्य समजावून सांगणे हा आहे. क्रीडाविषयक पोषण ही नव्याने विकसित झालेले पोषण क्षेत्रातील एक उपशाखा असून तिचा संबंध मानवी शरीर व व्यायामशास्त्राशी आहे. विविध खेळ व क्रीडा कलापांमध्ये भाग घेणाऱ्या मुलांच्या संपूर्ण पोषणासाठी योग्य व मूलभूत अशा आहारविषयक धोरणांची आवश्यकता असते. त्याचप्रमाणे अशी धोरणे प्रत्यक्ष आचरणात आणण्यासाठी त्यांना पोषण आणि व्यायामशास्त्र यांचा असलेला संबंध त्याचप्रमाणे सर्वोत्तम कामगिरी करण्यासाठी प्रशिक्षण आणि आहार विषयक सवय एकमेकांवर कशाप्रकारे अवलंबून आहेत याची माहिती देणे आवश्यक ठरते.

क्रीडा पोषणाचा अभ्यास का करावा?

एक खेळाडू हा विविध प्रकारच्या प्रशिक्षण आणि स्पर्धाद्वारे आपल्या स्वतःच्याच शरीराच्या मर्यादांना सातत्याने आव्हान देत असतो. त्याच्या या शारीरिक गरजा पूर्ण करण्यासाठी योग्य प्रकारचा आहार आवश्यक ठरतो. या कारणामुळेच कोणत्याही खेळाडू संदर्भात अतिशय कामगिरी गाठण्यासाठी क्रीडा पोषणाचा अभ्यास व अवलंब सहाय्यकारी ठरतो.

क्रीडा पोषण महत्त्वाचे का आहे?

विविध कारक क्षमतांचे प्राबल्य असणाऱ्या खेळांमध्ये भाग घेण्यासाठी योग्य ते आहार बदल करून आवश्यक ते पोषण मिळवणे आवश्यक आहे. त्याचप्रमाणे लहान वयामध्ये सुधरता विकास त्यानंतर विशेषतः पौष्टिकस्थेमध्ये सक्रिय जीवनशैली जगण्यासाठी व वजन

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वाढीची समस्या टाळण्यासाठी पोषण महत्त्वाचे काम करते. म्हणजेच खेळाडूच नव्हे तर कोणत्याही व्यक्तीच्या जीवनाची सामान्य गुणवत्ता सुधारण्यासाठी पोषण हे महत्त्वाचे आहे.

खेळाडूच्या बाबतीत बोलायचे झाले तर तो जेव्हा स्पर्धेमध्ये आपली अंतिम कामगिरी करत असतो अशावेळी सुयोग्य आहार, कोणतीही दुखापत न झालेल्या तंदुरुस्त शरीर आणि लक्ष केंद्रित करण्याची क्षमता विकसित झालेले असणे गरजेचे असते. क्रीडा पोषण म्हणजे केवळ वजन आणि शरीरात रचना यांचा विचार करून केलेली उष्मांकांची बेरीजच नाही किंवा हे केवळ स्नायूसाठी प्रथिने किंवा ऊर्जे साठी पिष्टमय पदार्थ यांच्या सेवनापुरते मर्यादित नाही. तर क्रीडा पोषण हे व्यक्तीच्या खाण्याच्या सवयी व पौष्टिकता यांच्याशी संबंधित आहे.

खडतर शारीरिक प्रशिक्षण आणि स्पर्धांतील सहभाग याद्वारे खेळाडू हे सातत्याने त्यांच्या स्वतःच्याच शरीराच्या मर्यादांना आव्हान देत असतात त्यामुळे त्यांच्यात कोणत्याही परिस्थितीत टिकून राहण्याची शरीराची क्षमता कायम ठेवण्यासाठी खेळाडूंनी शरीराला योग्य ती ऊर्जा प्रदान करणाऱ्या आहाराचे सेवन केले पाहिजे.

खेळाडूसाठी पोषण हे अत्यंत महत्त्वाचे आहे. कारण ते क्रियाकलाप व इतर शारीरिक हालचाली करण्यासाठी आवश्यक ती ऊर्जा प्रदान करते. त्यांनी घेतलेल्या आहाराचा प्रशिक्षण, कामगिरी आणि पुनर्प्राप्तीवर प्रभाव पडत असतो. क्रीडा पोषणाचा विचार करता केवळ अन्नघटकच महत्त्वाचे नाही तर खेळाडू दिवसभर काय, किती व केंव्हा खातात हे देखील महत्त्वाचे आहे. खेळाडू स्पर्धेत कामगिरी करून आल्यावर किंवा दैनंदिन व्यायाम केल्यावर होणारी शरीराची झीज भरून काढण्यासाठी देखील पोषण महत्त्वाचे असते. यासाठी एखाद्या खेळाडूने व्यायामाचे सत्र किंवा स्पर्धेपूर्वी काय खाल्ले, किती प्रमाणात खाल्ले व केंव्हा खाल्ले याकडे बारकाईने लक्ष देणे आवश्यक आहे.

मूलभूत पोषण घटक

आहार हा साधारणपणे सहा प्रकारच्या पोषक घटकांनी बनलेला असतो. हे सहा घटक आपल्या शरीरात ऊर्जा निर्माण करणे उतींची वाढ तसेच शरीराची झीज भरून काढण्यासाठी आवश्यक असतात. ही सहा घटक म्हणजे प्रथिने, स्निग्ध पदार्थ, पिष्टमय पदार्थ, जीवनसत्वे, खनिजे

आणि पाणी होय. आपल्या शरीराचे कार्य योग्यरीत्या चालण्यासाठी या सर्व घटकांची शरीराला दररोज आवश्यकता असते. मात्र आपले शरीर यांना स्वतःहून तयार करू शकत नाही त्यामुळे योग्य पोषणाद्वारेच आपण या घटकांची परिपूर्णता करू शकतो.

१. **प्रथिने** : रक्तातील पोषक घटकांचे हस्तांतरण, स्नायूंचा विकास व व्यायाम करत असताना प्रभावित झालेल्या उर्जेच्या दुरुस्तीसाठी प्रथिने कार्य करतात.
२. **स्निग्ध पदार्थ** : कमी ते मध्यम तीव्रतेच्या व्यायामादरम्यान ऊर्जा प्राप्तीसाठी प्रामुख्याने स्निग्ध पदार्थांचा उपयोग होतो. तसेच पेशींच्या रचनेला आवरण प्रदान करणे, संप्रेरकांची निर्मिती करणे, योग्य शारीरिक हालचालींसाठी मज्जातंतूंना तयार करणे आणि जीवनसत्त्वाची शोषण क्रिया सुलभ करणे अशी महत्त्वाची कार्ये पार पाडण्यासाठी स्निग्ध पदार्थांची आवश्यकता असते.
३. **पिष्टमय पदार्थ** : पिष्टमय पदार्थ हे शरीरामध्ये ग्लायकोजेनच्या स्वरूपात साठवले जातात जे शारीरिक क्रियांमध्ये तात्काळ ऊर्जा प्राप्त करण्यासाठी वापरले जातात. व्यायामादरम्यान आवश्यक असलेली ऊर्जेची गरज पूर्ण करण्यासाठी तसेच रक्तातील ग्लुकोजची पातळी सामान्य राखण्यासाठी व स्नायूंमध्ये ग्लायकोजेनची मात्रा सातत्याने कायम राखण्यासाठी पिष्टमय पदार्थांची आवश्यकता असते.
४. **जीवनसत्त्वे व खनिजे** : विविध प्रकारची सूक्ष्म शारीरिक कार्ये व क्रियांमध्ये जीवनसत्त्वे आवश्यक असतात. त्यामुळे शरीर निरोगी आणि रोगमुक्त राहण्यास मदत होते. तसेच खनिजांमुळे ऊर्जा रचनात्मक विकास होतो व शारीरिक प्रक्रियेचे चलन वलन व्यवस्थित राहते.
५. **पाणी** : मानवी शरीर हे इतर कोणत्याही पोषक घटकांशिवाय दीर्घकाळ तग धरू शकते. मात्र पाणी हा त्याला अपवाद आहे, कारण शरीर हे ५५ ते ६० टक्के पाण्याने बनलेले आहे. खेळाडूंचा विचार करता तापमानाचे नियंत्रण, सांध्यांचे चलन वलन आणि सक्रिय उर्जेमध्ये पोषक द्रव्यांची वाहतूक करण्यासाठी पाणी हे अत्यंत महत्त्वाचे आहे. त्याचप्रमाणे पचनसंस्थेला मदत करण्यासाठी आणि शरीरातील अनावश्यक विषद्रव्ये बाहेर काढण्यासाठी पाणी सातत्याने कार्य करत असते.

अत्युच्च कामगिरीच्या शिखरावर असलेल्या खेळाडूंच्या पोषण विषयक गरजांमध्ये आहारातील गरजेनुसार उष्मांकांचे सेवन, शरीरातील पाण्याची पातळी आणि आहाराच्या वेळा यांचा समावेश असतो. पौगंडावस्थेतील खेळाडू, त्यांचे पालक व प्रशिक्षक यांना क्रीडा पोषणाबद्दल अनेकदा चुकीची माहिती मिळालेली असते किंवा गैरसमज

असतात. अशावेळी त्यांना पोषणाबद्दल योग्य ते माहिती मिळणे गरजेचे आहे. कारण तरुण खेळाडूंना योग्य पोषण हे केवळ त्यांच्या स्पर्धेतील यशासाठीच नाही तर शारीरिक वाढ, विकास आणि एकूणच आरोग्यासाठी अत्यंत महत्त्वाचे असते.

निष्कर्ष

खेळाडूंच्या जीवनात आहाराला अनन्यसाधारण महत्त्व आहे. उत्कृष्ट कामगिरी आणि उत्तम आरोग्य याचे संतुलन साधण्याची गुरुकिल्ली म्हणजे क्रीडा पोषण होय. खेळाडूंनी स्पर्धा, प्रशिक्षण आणि पुनर्प्राप्ती मध्ये त्यांच्या शारीरिक ऊर्जेच्या गरजा पूर्ण करण्यासाठी योग्य त्या पौष्टिक पदार्थांचे सेवन केले पाहिजे. कारण या गरजा पूर्ण न केल्यास कामगिरीवर नकारात्मक परिणाम होतो व सोबतच आरोग्य विषयक समस्यांचा धोका वाढतो. यासाठी खेळाडूंना आहाराच्या पद्धतीबद्दल सुशिक्षित करणे अत्यावश्यक आहे. बाजारातील निकृष्ट पदार्थांच्या चुकीच्या पद्धतीने केल्या जाणाऱ्या भडीमार्यामुळे दर्जाहीन पदार्थांचे सेवन केले जाण्याची शक्यता बळावते. ज्याचा सरळ प्रभाव हा स्पर्धेतील कामगिरी व खेळाडूंच्या आरोग्यावर होतो.

संदर्भ सुची

१. Congeni J, Miller S (2002) Supplements and drugs used to enhance athletic performance. *Pediatr Clin North m* 49: 435-461.
२. Prochaska JO, Velicer WF (1997) The transtheoretical model of health behavior change. *m J Health Promot* 12: 38-48.
३. Clark Nancy (2008) Sports nutrition guide book: The 1st Nutrition resources for active people. Health work fitness center chestnut hill, M, US, pp. 103-105.
४. Burke LM², Hawley J, Wong SH, Jeukendrup E (2011) Carbohydrates for training and competition. *J Sports Sci* 29 Suppl 1: S17-S27.
५. Fogelholm M² (2010) Physical activity, fitness and fatness: relations to mortality, morbidity and disease risk factors. systematic review. *Obes Rev* 11: 202-221.
६. Bonci L (2010) Sport nutrition for young athletes. *Pediatr nn* 39: 5.
७. Shirreffs, SM² Sawka MN (2011) Nutrition for endurance sports; E marathon, triathlon, and road cycling, New Delhi. 101-107.
८. Jeukendrup A, Cronin L (2011) Nutrition and elite young athletes. 56: 47-58.
९. Srilakshmi B (2003) Food Science. In: Food Technology and further food (eds). New ge International, New Delhi. 375-380.
१०. Costill DL, Miller JM² (1980) Nutrition for endurance sport: carbohydrate and fluid balance. *Int J Sports Med*. 1: 2-14.



संतुलित आहार आणि खेळाडू

डॉ. स्वाती वसंतराव चव्हाण.

के सी ई सो शिक्षणशास्त्र आणि शारीरिक शिक्षणशास्त्र महाविद्यालय, जळगाव.

प्रस्तावना

खेळाडूने सर्वोत्तम दर्जाची कामगिरी करण्यात सर्वात महत्वाचा घटक असतो, तो त्या खेळाडूचा आहार; कारण योग्य आहारावरच खेळाडूचं वजन, शरीरातील चरबीचं, पाण्याचं प्रमाण, स्नायूंची, श्वसनाची आणि हृदयाची कार्यक्षमता आणि ताकद अवलंबून असते. प्रत्येक अॅथलिटचा खेळ, त्याचं वजन, वय, प्रशिक्षणाचा टप्पा आणि वातावरणाचं तापमान यांसारख्या अनेक घटकांवर हा आहार अवलंबून असतो. आरोग्य चांगले राहण्यासाठी महत्वाचा घटक म्हणजे आहार. शरीराच्या वाढीसाठी व उत्तमआरोग्यासाठी योग्य आहाराची गरज असते. खरे तर हा आहार आपल्या शरीरातील सर्व क्रिया सुरळीत चालण्यासाठी इंधनपुरवठ्याचे कार्य करत असतो. आपले आरोग्य हे आपण घेणाऱ्या आहारावर अवलंबून असते.

आपण जे अन्नपदार्थ खातो त्यांना एकत्रितपणे आहार म्हणतात. आपल्या आहारात तृणधान्ये, कडधान्ये, शेंगा, तेलबिया, भाज्या, फळे, दूध, दुग्धजन्यपदार्थ, अंडी, मांस, मासे, तेल, तूप, शर्करायुक्त पदार्थ, मसाल्याचे पदार्थ इत्यादींचा प्रामुख्याने समावेश होतो. अन्नपदार्थ जरी अनेक प्रकारचे असले तरी त्यातील मूलभूत पोषकतत्त्वे, क्षार आणि पाणी हे घटक असतात. अन्न पदार्थांच्या प्रमाणानुसार यातील प्रत्येक घटकाचे प्रमाण वेगवेगळे असते. पोषकद्रव्ये शरीरात घेऊन त्यांचावापर करण्याच्या प्रक्रियेला 'पोषण' म्हणतात. शरीराला अक्षय ऊर्जेचा पुरवठा करणारा घटक म्हणजेच आहार. शरीररूपी यंत्र सातत्याने आणि अव्याहत चालू ठेवण्यासाठी लागणारे इंधन म्हणजेच 'आहार'. शरीराचे पोषण करणारी जीवनदायी रचना म्हणजे 'आहार', शरीराची झीज भरून काढणारे टॉनिक म्हणजेच 'आहार', थोडक्यात दैनंदिन जीवनात आवश्यक अशा शरीराच्या जीवनप्रक्रियांची कार्ये पूर्ण करण्याचे साधन म्हणजे 'आहार'.

आहार - पोषणाची गरज

- शारीरिक श्रम करण्यासाठी ऊर्जा पुरवठा.
- शरीरातील पेशी, ऊती, ग्रंथी यांच्या कार्यासाठी.
- शरीराची वाढ व विकास.
- शरीराचे तापमान स्थिर ठेवणे.

- शरीरात रोगप्रतिकार क्षमता विकसित करणे.

पोषक द्रव्यांचे वर्गीकरण : अन्नातून आपल्याला विविध प्रकारचे अन्नघटक मिळतात. हे अन्नघटक म्हणजेच पोषकद्रव्ये होय.

पोषकद्रव्यांचे दोन गटांत वर्गीकरण केले जाते.

१) मुख्य पोषकद्रव्ये (Staple nutrients) : कर्बोदके, प्रथिने व स्निग्ध पदार्थ ही मुख्य पोषकद्रव्ये असून यांची शरीरास मोठ्या प्रमाणात आवश्यकता असते.

२) सूक्ष्म पोषकद्रव्ये (Micro nutrients) : खनिजे, क्षार व जीवनसत्त्वे यांची शरीरात अल्प प्रमाणात गरज असते. त्यांना सूक्ष्म पोषकद्रव्ये म्हणतात.

३) कर्बोदके (Carbohydrates) : शरीराला ऊर्जा पुरवण्याचे महत्वाचे कार्य कर्बोदके करतात. एक ग्रॅम कर्बोदकापासून ४ किलो कॅलरी ऊर्जाप्राप्त होते. शरीराला लागणाऱ्या एकूण ऊर्जेपैकी ५५ ते ६०% ऊर्जा कर्बोदकांपासून मिळते.

शरीराच्या गरजेनुसार आहारखेळाडूच्या आहाराचे त्या त्या वेळच्या शरीराच्या गरजांचा विचार करून नियोजन करावे लागेल.

१) ताकद वाढवणारा आहार : या प्रकारच्या आहाराच्या सेवनाने शरीराच्या मांस पेशींची, हाडांची ताकद वाढण्यास मदत होते. यामध्ये चांगल्या प्रतीचे सायीसह दूध, खजूर, अंजीर, बदाम, पिस्ता, अक्रोड, खारीक, डिक, केळी, फणस, नारळ, जरदाळू, चारोळी, श्रीखंड, कमी मसाले वापरून शिजवलेले मांस, अंडी तसेच गोड चवीचे पदार्थ यांचा समावेश करता येतो.

२) थकवा कमी करणारा आहार : खेळाडूंचा स्टॅमिना वाढवणे, पुनर्भरण वेळ (recovery time) कमी करणे यासाठी या आहाराचा उपयोग होतो. याकामी मनुकांचे सरबत, खजुराचे सरबत, डाळिंबाचे सरबत, करवंदाचे सरबत, साळीच्या लाह्यांचे पाणी वापरून तयार केलेली सर्व सरबते, श्रीखंड गोळ्या, चिंच गोळ्या, ताक, शहाळ्याचे पाणी यासारखे आंबट गोड चवीचे पदार्थ मदत करतात.

३) झीज भरून काढणारा आहार : संपूर्ण दिवसभराच्या दगदगीनंतर केवळ थकवा दूर होणे उपयोगाचे ठरत नाही तर विश्रांतीनंतर आदल्या दिवशी झालेली झीज भरून येऊन पुन्हा दुसऱ्या दिवशीच्या

सरावासाठी तयार करणारा आहार या गटात मोडतो. सुके अंजीर, बदाम, सुकामेवायुक्त लाडू, खसखस वापरून केलेली चिक्की, केळी, तूप, साखर, नॉनव्हेज सूप, ओल्या खोबऱ्याची वडी, कोहळ्याचा पेठा, ओले नारळ लाडू, ड्रायफ्रूट्स व धने घालून केलेला थंडाईसारखा मिल्कशेक यांसारख्या पदार्थांचा यात समावेश होतो .

४) **कार्यमान उंचावणारा आहार** : सातत्याने सराव करत असताना स्पर्धेच्या वेळी उत्तम यश देण्यासाठी घ्यावयाची काळजी यात समाविष्ट होते. यामध्ये आहारात साजूक तुपाचा समावेश, तसेच मेथी दाणे, हिंग, कढीपत्ता, शेवगा, सोयाबीन, बीट यांसारख्या घटकांचा अन्नपदार्थात सातत्याने समाव असावयास हवा. असा आहार कार्यमान उंचावत ठेवण्यासाठी, शरीराच्या पोषणात सातत्य राखणारा ठरतो. कार्यमान उंचावणाऱ्या आहारासाठी स्पर्धेपूर्वी सुपाचा हलका आहार घेणे, मसाले-तिखट कमी अशा सात्विक आहाराचा समावेश करणे, स्पर्धेच्या आदल्या दिवशी शिकरण, रताळ्याची खीर, बटाट्याचा पराठा, चीज पराठा यांसारखा आहार घेणे योग्य ठरते. याच जोडीला स्पर्धेपूर्वी घेतलेली पुरेशी विश्रांतीही कार्यमान उंचावण्यासाठी मोठ्या प्रमाणात मदत करते.

५) **आहार आणि मन** : आहार या विषयाचा अभ्यास करताना वेगवेगळ्या घटकांचा विचार केला गेला. आहाराचे स्वरूप, त्यातील घटक पदार्थ, शरीराच्या गरजा, अन्नघटकांचे पोषणमूल्य, शरीरात घेतलेल्या अन्नाचे पचन होण्याची क्रिया सुलभ व्हावी यासाठी शरीराला करावयाची मदत, या आणि अशा अनेक पैलूंचा विचार साधारणतः केला जातो. मात्र या संपूर्ण प्रक्रियेशी संबंधित असा एक घटक जरासा दुर्लक्षित राहतो तो म्हणजे मानवी मन. मानवी मन म्हणजे शरीरात न दिसणारा पण स्वतःचे अस्तित्व सातत्याने दर्शवून देणारा घटक. शरीराच्या चलनवलनासाठी आवश्यक अशा सगळ्याच शरीरसंस्थांमध्ये हा विकारांप्रमाणे कार्यरत असतो. शरीरातील अवयवांची कार्ये योग्यरित्या चालू ठेवणे, या कार्यप्रक्रियेसाठी मदत करणे, योग्य त्या वेळी या प्रक्रियांवर नियंत्रण आणणे या आणि अशा अनेक क्रिया मनाच्या माध्यमातून नियंत्रित केल्या जातात.

६) **शरीराची झीज** : खेळाडूंचा आहार शरीराचे पोषण होण्यासाठी जसा आहार गरजेचा असतो तसाच, शरीराची झीज भरून काढण्यासाठी सुद्धा आहार गरजेचा असतो. जास्त श्रमाची, जास्त कष्टाची कामे करणाऱ्या शरीरासाठी झीज होण्याचे प्रमाण जास्त असते. ही झीज भरून काढण्यासाठी आहाराचे नियोजन व्यायामाच्या प्रमाणात होणे गरजेचे असते. अन्यथा शरीराची वाढ खुंटते. तसेच वेगवेगळ्या आजारांचे व दुखापतींचे सत्र सुरू होते.

७) **पुरेसा आहार** : खेळाडूने अंगीकारावयाच्या अत्यावश्यक गुणांपैकी स्नायूंची ताकद वाढवणे, कमावणे एवढेच नाही तर प्राप्त ताकद टिकवणेही गरजेचे असते. खेळाडूचा आहार ठरवताना पुढील गोष्टी लक्षात घेणे महत्वाचे आहे.

१) व्यायाम, स्वरूप व कालावधी

२) शाळा महाविद्यालय ते घर असा प्रवास व त्यातून होणारे कष्ट.

३) शाळा, महाविद्यालयात जाणारा वेळ एकूणच रोजच्या जीवनात होणारी हालचाल, त्यासाठी लागणारी ऊर्जा, ही ऊर्जा मिळवण्यासाठी उपलब्ध असणारे आहार घटक यांचा सखोल विचार आवश्यक ठरतो.

८) **परिपूर्ण आहार** : खेळाडूच्या आहाराचा विचार करत असताना रोजचा आहार हा जास्तीतजास्त पोषणमूल्यांनी युक्त असणे गरजेचे आहे. जसे की, कर्बोदकांचा (carbohydrate) विचार करताना धान्य unpolished असावे, त्यावर अतिरिक्त प्रक्रिया झालेल्या नसाव्यात; प्रथिने (proteins) ही कडधान्यांच्या उसळी, घट्ट वरण, शिजवलेली डाळ, चांगल्या प्रतीचे दूध व दुग्धजन्य पदार्थ, मांस , मासे तर मेद (fats) हे साजूक तूप, घरी तयार केलेले लोणी यासारख्या स्वरूपात असण्यावर आवर्जून भर दिला पाहिजे. जीवनसत्त्वे (Vitamins) व खनिजे (Minerals) ही फळे व भाज्या यांतूनच घेतली जावी. कोणत्याही एकाच घटकावर घटकावर अनावश्यक भर न देता या सर्वप्रकारांचा जर आहारात समावेश केला गेला तर खेळाडूसाठी योग्य व परिपूर्ण आहार ठरू शकेल. कर्बोदकेयुक्त (Carbohydrate) पदार्थांचे सेवन सरावाच्या पूर्वी एक तास केल्यास त्याचे लोडींग होऊन शरीराला तत्काळ ऊर्जेचा स्रोत उपलब्ध करता येईल. यासाठी उकडलेला बटाटा, रताळी, केळी, शिंगाडा लाडू यांसारखे पदार्थ मदतीचे ठरतील तर सराव पश्चात तीन ते चार तासांनी घेण्यात येणारा आहार हा उच्च प्रथिनयुक्त म्हणजेच कडधान्याच्या उसळी, सोयाबीन, दुग्धजन्यपदार्थ, घट्ट वरण, अंडी, मांसाहार यांनी युक्त असणे फायद्याचे ठरते .

सारांश

चांगले पोषण क्रीडा कामगिरी वाढवू शकते. सुनियोजित, पोष्टिक आहाराने खेळाडूच्या जीवनसत्त्वे आणि खनिजांच्या बहुतांशी गरजा पूर्ण केल्या पाहिजेत आणि स्नायूंच्या वाढीस आणि दुरुस्तीला चालना देण्यासाठी पुरेशा प्रथिने दिली पाहिजे. संपूर्ण धान्य ब्रेड आणि तृणधान्ये यांसारखे अपरिष्कृत कर्बोदकांमध्ये समृद्ध असलेले पदार्थ आहाराचा आधार बनले पाहिजेत. क्रीडा पोषण योजना वैयक्तिक ऍथलीटसाठी तयार केल्या पाहिजेत आणि त्यांचा विशिष्ट वेळ, ध्येये, अन्न प्राधान्ये आणि व्यावहारिक आव्हाने यांचा विचार केला पाहिजे.

संदर्भ सुची

1. Ferriera, M. (२०१८, एप्रिल २५). ६ आवश्यक पोषक: ते काय आहेत आणि आपल्याला त्याची आवश्यकता आहे का.
2. <https://www.healthline.com/health/food-nutrition/six-essential-nutrientswater> Minerals वरून पुनर्प्राप्त (२०२०, मार्च २). <https://medlineplus.gov/minerals.html> Nutrients वरून पुनर्प्राप्त (२०१७, डिसेंबर १९). <https://www.who.int/elena/nutrient/en/> वरून पुनर्प्राप्त
3. ब्रेहम बीजे, डी'अलेसिओ डीए.करर ओपिन एंडोक्रिनॉल डायबेटिस ओबेस.२००८ ऑक्टोबर;१५(५):४१६-२१.जे एम डायट असोसिएशन
4. जे एम डायट असोसिएशन २००० डिसेंबर;१००(१२):१५४३-५६. वेळ: १०.१०१६/S०००२-८२२३(००)००४२८-४. PMID:11145214



अन्नाचा पौष्टिक दर्जा वाढविणे एक चिकित्सक अभ्यास

प्रा. डॉ. गणेश अजबसिंग पाटील

सहाय्यक प्राध्यापक

के.सी.ई.सोसायटीचे शिक्षणशास्त्र आणि शारीरिक शिक्षणशास्त्र महाविद्यालय जळगाव

सारांश

अविकसित आणि विकसनशील देशात कुपोषणाच्या समस्येने श्रेष्ठमान घातलेले दिसून येते. कुपोषणामुळे होणारे माता-बाल मृत्यूचे प्रमाण वरचेवर वाढत जात असल्याचे दिसून येते. लोकांना पोषणाविषयी शिक्षण देऊन जागरूकता निर्माण करून ही समस्या सोडवता येऊ शकते. परंतु भारतासारख्या झपाट्याने वाढणाऱ्या लोकसंख्येच्या देशात हा उपाय प्रभावी ठरू शकत नाही. त्यासाठी अन्नपदार्थाचे उत्पादन आणि निर्मिती या स्तरावर पदार्थाच्या पौष्टिक उंचावण्यासाठीची क्रिया करून ते अन्नपदार्थ समाजातील (कुपोषण होण्यास संभाव्य घटक गरोदर स्त्री, स्तनदा माता व मुले) घटकापर्यंत पोचवल्यास कुपोषणाची बऱ्याच अंशी नियंत्रित करता येईल. विकसित राष्ट्रात कुपोषणाच्या समस्येचे निराकरण करण्यासाठी अनेक मार्गांचा शोध लावण्यात आलेला आहे. कृत्रिमरित्या पोषक घटके तयार करून ती अन्नपदार्थात (Fortification Enrichment) मिसळून किंवा एखाद्या अन्नपदार्थात एखाद्या पोषक घटकाचा अभाव असेल तर तो घटक असणाऱ्या पदार्थाचा वापर करून दोन पदार्थांचे मिश्रण करून समृद्ध अन्नपदार्थ कुपोषित पुरवून कुपोषणाची समस्या सोडविण्यास मदत होईल.

अन्नपदार्थातील पोषक घटक

अन्नपदार्थातील पोषक घटकांचा अन्न शिजविण्याच्या किंवा साठवणुकीसाठी केलेल्या (उदा. वाळवणे, भाजणे, शिजवणे) क्रियामुळे नाश होतो. हा नाश योग्य ती काळजी घेऊन काही प्रमाणात कमी केला जातो. अन्नधान्य किंवा अन्नपदार्थाच्या उत्पादनाच्या वेळी ज्या पोषक घटकांचा जास्त प्रमाणात न्हास होतो ती पोषक घटके त्यात मिसळून नैसर्गिकरित्या त्या पदार्थात ते जेवढी असतात तेवढे करून पौष्टिकता निर्माण केली जाते. तसेच एखाद्या अन्नपदार्थात जे घटक मुळातच नाहीत (ब्रेडमध्ये-लोह) ते मिसळून पौष्टिकता वाढविण्याचे प्रयत्न उत्पादन प्रक्रियेच्या वेळेस केले जातात. या शिवाय मोड आणून आंबवण्याची क्रिया करून पूरक पदार्थाचा किंवा पर्यायी अन्नपदार्थाचा उपयोग करून दैनंदिन आहारात मोठ्या प्रमाणात समाविष्ट केल्या जाणाऱ्या अन्नपदार्थाचा पोषणदर्जा वाढवता येतो. म्हणजेच अन्नाचा दर्जा वाढविण्याच्या पद्धतीचे वर्गीकरण दोन प्रकारे करता येईल.

- १) विकसित तंत्राच्या सह कुठल्याही अन्नपदार्थात आवश्यक जीवनसत्त्वे, क्षार, नत्राम्ले मिसळणे. उदा. समृद्धीकरण,
- २) अन्नपदार्थ शिजविण्यापूर्वी प्रक्रिया करून (उदा. मोड आणणे, आंबवणे) तसेच पोषक घटकाचे प्रमाण मिळविण्यासाठी पूरक पदार्थाचा व पर्यायी पदार्थाचा वापर करून पोषण दर्जा वाढवता येतो.

याशिवाय लायमिंग, माल्टिंग, पारबॉयलिंग याद्वारेदेखील पोषणदर्जा वाढवता येतो.

दृढीकरण आणि समृद्धीकरण

० ते ६ वर्षे या वयोगटात आढळून येणारी कुपोषणाची सामाजिक समस्या सोडवण्याचा प्रभावी मार्ग म्हणून दृढीकरण आणि समृद्धीकरण या पद्धतींना विचारात घेता येते. जीवनसत्त्वे, आवश्यक नत्राम्ले कमी किमतीत आणि मोठ्या प्रमाणात तयार करण्यात येते. ज्यामुळे कुपोषणाची समस्या सोडविण्यासाठी बऱ्याच प्रमाणात मदत झाली असे आढळून येते. अन्नपदार्थाचे भोज्यमूल्य किंवा पौष्टिक दर्जा वाढविण्यासाठी अन्नसमृद्धकांचा उपयोग केला जातो. हे पदार्थ अन्नपदार्थापैकी किंवा रासायनिक संयुगे असतात.

व्याख्या

अन्नसमृद्धके म्हणजे जो पदार्थ अन्न पदार्थात मिसळला असता, अन्नपदार्थातील पोषक घटकाची कमतरता भरून निघते किंवा ज्यामुळे अन्नपदार्थाचे एकूण पोषणमूल्य वाढते असा पदार्थ होय.

विकसित तंत्राच्या साहाय्याने कुठल्याही अन्नपदार्थात कमी किमतीत आवश्यक जीवनसत्त्वे व नत्राम्ले मिसळून पदार्थाचा पौष्टिक दर्जा वाढवता येतो. ज्याप्रकारे हा दर्जा वाढवला जातो त्यांना दृढीकरण (Fortification) व समृद्धीकरण (Enrichment) म्हणतात.

व्याख्या

दृढीकरण म्हणजे कुठल्याही अन्नपदार्थात जे आवश्यक पोषक घटक नाहीत ते मिसळणे म्हणजे दृढीकरण.

समृद्धीकरण अन्नपदार्थातील जे घटक शिजवणे, वाळवणे, साठवणे या क्रियेने नष्ट होतात ते घटक त्यात मिसळून त्यांचे प्रमाण आहे तेवढेच करणे होय.

दृढीकरण व समृद्धीकरण करण्यासाठी नैसर्गिक व कृत्रिम/रासायनिक घटकांचा वापर केला जातो. उदा. अंडी, दूध पावडर, बदाम, सोयाबीन पीठ, क्रीम, माल्ट यासारखे नैसर्गिक पदार्थ. तसेच नत्राम्ल, स्निग्धाम्ल, अल्ब्युमिनसारखे कृत्रिम रासायनिक पदार्थ.

दृढीकरण व समृद्धीकरणाचे उद्देश

- १) शिजवताना किंवा साठवताना होणारा पोषक घटकांचा नाश भरून काढणे.
- २) विशिष्ट वयोगटातील मुलांची पोषक घटकांची गरज पूर्ण करणे. उदा. लहान मुलांचे पूरक अन्न, सेरेलॅक, फॅरेक्स, नेस्टम वगैरे.
- ३) सर्वसामान्य लोकांच्या आरोग्यासाठी सामान्य लोकांच्या खाण्याच्या सवयी न बदलता आहार व आरोग्याचा दर्जा सुधारणे. उदा. ब्रेडमध्ये ब१, ब२, ब३, व लोह मिसळले जाते.
- ४) अदलाबदल करता येण्यासारखे खाद्यपदार्थ समान पातळीवर आणणे. उदा. लोण्याऐवजी मार्गारीनचा उपयोग केला जातो. म्हणून एक किलो मार्गारीनमध्ये १५००० खण जी 'अ' मिसळून त्याचे पोषणमूल्य लोण्याएवढे केले जाते. तसेच १०० ग्रॅम अननस, द्राक्ष, सफरचंदच्या रसात ३० मि.ग्रॅ. जी 'क' मिसळून त्यातील जी 'क' चे प्रमाण संत्राच्या रसाएवढे करतात.
- ५) अन्नाचे पूर्णान्न रूपान्तर करणे : गोड पदार्थात खूप जास्त प्रमाणात कर्बोदके इतर पोषक घटकांचे प्रमाण कमी असते. अशा पदार्थात कर्बोदकांच्या ज्वलनासाठी आवश्यक ब१ (थायामिन), व ब३ (नियासिन मिसळले जाते.) त्यासाठी प्रत्येक १०० ग्रॅम कर्बोदकासाठी ०.२ मि.ग्रॅ. थायामिन व ३.३ मि. ग्रॅ. नियासिन घालून पूर्णत्व आणले जाते.

मार्गदर्शक तत्त्वे

समृद्धीकरण किंवा दृढीकरण करण्यासाठी काही गोष्टी विचारात घेऊन त्यानुसार दृढीकरण समृद्धीकरणाची क्रिया करावी.

- १) अन्नपदार्थाची निवड
- २) निवडलेल्या अन्नपदार्थात मिसळला जाणारा पोषक घटक या दोन गोष्टींचा प्रामुख्या विचार करावा लागतो.

समृद्धीकरण किंवा दृढीकरण करण्यासाठी अन्नपदार्थाची निवड करताना

- तो पदार्थ जास्तीत जास्त लोक उपयोगात आणतात असा असावा.
- बहुतेक दररोजच्या खाण्यात समाविष्ट असणाऱ्या पदार्थाची निवड करावी.
- कमी ठिकाणी उत्पादित होणारा असावा.
- साठवणूक व वितरणाच्या दृष्टिकोनातून उपयुक्त व योग्य असावा.
- अन्नपदार्थाची निवड केल्यावर त्यात मिसळल्या जाणारा पोषक घटक हा अन्नपदार्थात मिसळल्यावर पदार्थाचा रंग बदलणार नाही असा असावा.

- आहारात पदार्थ समाविष्ट केल्यानंतर पोषक घटकांचे योग्य प्रकारे शोषण व्हावे.
- त्यामुळे पदार्थाच्या चवीत बदल होणार नाही असा असावा.
- वाहतूक आणि साठवणी दरम्यान त्याच्या दर्जावर परिणाम न होता त्याचा दर्जा टिकून राहील असा असावा.

विविध अन्नपदार्थांचे समृद्धीकरण व दृढीकरण

१) गव्हाचे पीठ : या पिठाचा वापर सर्वच स्तरातील लोक करतात म्हणून त्याचे समृद्धीकरण केले जाते. गव्हाच्या पिठात गिरणीतच जीवनसत्त्वे व क्षार मिसळतात. कणिकेत साधारणतः थायामिन, रायबोफ्लेविन, नियासिन, कॉल्शियम, लोह मिसळले जाते. त्याचप्रमाणे जी 'ई' ब६ आणि लायसिन मिसळतात.

२) ब्रेड : ब्रेड तयार करताना त्यात जीवनसत्त्वे, क्षार व लायसिन मिसळतात. दूध पावडर मिसळूनदेखील ब्रेडचे समृद्धीकरण केले जाते. त्याचप्रमाणे १०० ग्रॅ. ब्रेडमध्ये १.८ मि.ग्रॅ. प्रमाणात लोह देखील मिसळले जाते.

३) शेवया / मॅक्रोनी : यात शेवया पाण्यात उकळवून पाणी फेकून देतात. ज्यामुळे पोस्क घटकाचा नाश होतो. त्यामुळे ३० ते ३५ टक्के जास्त जीवनसत्त्वे व क्षार मिसळले जातात. १०० ग्रॅ. पदार्थात २.९ मि. ग्रॅ. लोह मिसळले जाते. लोह मिसळल्यामुळे अॅनिमियाचे प्रमाण कमी होण्यास मदत होते.

४) तांदळाचे समृद्धीकरण : १९४५ साली अमेरिकेत तांदळाचे समृद्धीकरण करण्यासाठी पावडर (Premix) तयार करण्यात आले. या पावडरपासून तांदळाच्या आकाराच्या गोळ्या तयार करून तांदळात मिसळतात. याशिवाय शैवल (Algae) वापरून देखील तांदळाचे समृद्धीकरण केले जाते. शैवलमध्ये नत्राम्लाचे प्रमाण असते. ज्यामुळे शैवलने समृद्धीकरण केलेल्या तांदळाची नत्राम्ल धारणाशक्ती वाढते. शिओनाइन, ट्रिप्टोफेन ही नत्राम्ले मिसळतात.

५) मिठाचे समृद्धीकरण : डोंगराळ भागात ग्वायटरचे (गलगंड) प्रमाण जास्त दिसून येते. त्यावर नियंत्रण ठेवण्यासाठी साध्या मिठात आयोडिन मिसळून किंवा पाण्यात आयोडिन घालून समृद्धीकरण केले जाते. प्रतिकिलो मिठात १५ मि.ग्रॅ. एवढे आयोडिन घातले जाते. शाळेत मुलांना आयोडिन मिश्रीत चॉकलेट व गोळ्या देतात.

६) गोड पदार्थ व फळाच्या रसाचे समृद्धीकरण : गोड पदार्थ किंवा टॅपिओकासारख्या पदार्थातून केवळ कर्बोदकेच मिळतात. कर्बोदकांच्या ज्वलनासाठी ब१ व ब३ ची आवश्यकता असते. म्हणून १०० ग्रॅ. कर्बोदकामागे २ मि.ग्रॅ. थायामिन व ३.३ मि.ग्रॅ. नियासिन मिसळतात. कर्बोदकेयुक्त पदार्थात प्रथिने किंवा मांसाची पावडर मिसळून समृद्धीकरण केले जाते. जीवनसत्त्व 'अ' ची कमतरता टाळण्यासाठी साखरेत जी 'अ' मिसळतात. साखरेचे उत्पादन करताना पाण्यात जी 'अ' मिसळून फवारले जाते. फळाच्या रसात जी 'क' कमी होते म्हणून ते मिसळतात.

७) दूध व दूध पावडरचे समृद्धीकरण : गाईच्या दुधात लोह, जी 'क', ब६, फोलीक आम्ल कमी असते म्हणून डेअरीच्या दुधात ही पोषक घटके मिसळतात. भारतात लहान मुलासाठी 'मिळणाऱ्या दूध पावडरमध्ये जी 'अ', 'ई', ब६, व फोलीक आम्ल घालून समृद्धीकरण

केले जाते.

८) नाशता/त्वरित खाण्यायोग्य पदार्थ : तयार करताना त्यातील पोषक घटकांचा नाश होतो. म्हणून धान्यात असणाऱ्या पोषक घटकाएवढी पोषक घटके वरून मिसळतात. चहा कॉफीचेदेखील दृढीकरण केले जाते.

अशाप्रकारे समाजातील प्रत्येक व्यक्तीचे पोषक घटक घेण्याचे प्रमाण/गुणवत्ता वाढविण्याचा प्रायोगिक उद्देश यातून पूर्ण केला जातो. तसेच अँनिमिया, ग्वायटर, जी 'अ' चा अभाव दूर करण्यासाठी अतिशय योग्य असे योजनाबद्ध कार्यक्रम ज्यामुळे आर्थिक परिस्थितीतून निर्माण झालेले कुपोषण कमी करता येते.

मोड आणणे (Germination)

कडधान्यांना मोड आणून आहारात उपयोग करण्याची फार जुनी पद्धती आहे. पूर्वी कडधान्ये भिजवून कपड्यात बांधून मोड आणले जायचे. आजकाल विशिष्ट प्रकारचे भांडे मोड आणण्यासाठी मिळते. ज्यात कडधान्यांना चांगले मोड येतात.

- १) मोड आणण्यासाठी कडधान्ये निवडून साफ करावे.
- २) १० ते १२ तास भिजवावेत.
- ३) नंतर १२ ते १५ तास उबदार ठिकाणी (४० ते ४५ सें.) ठेवल्यास मोड येण्याची क्रिया चांगली होते.

हिवाळ्यात मोड आणण्यासाठी ४० ते ४५ से. तापमानाचे पाणी वा अंकुरण चांगले होते.

मोड आल्यावर धान्याचा ताबडतोब उपयोग करावा. धान्य जास्त वेळ ठेवल्यास अंकुर जास्त वाढतो स्वामुळे यात बदल होतो. मोड आणलेल्या धान्याचा उसळ करण्या व्यतिरिक्त इतर उपयोग देखील केले जातात. उदा. मोड आलेले धान्य वाळवून भाजून पीठ करून त्याचा आहारात व लहान मुलांच्या आहारात वापर केला जातो.

मोड येण्याची क्रिया धान्याच्या प्रकारावर अवलंबून असते. जसे मूग, मटकी यांना लवकर तर हरभरा, वाटाणे, चवळी यांना मोड येण्यास वेळ लागतो.

मोड आल्यावर धान्यावरील काढीरचे आवरण सैल होते. अंकुर वाढतो. दोन्ही दले शोषून घेऊन फुगतात. त्यातील प्रथिने व कर्बोदकाचे साध्या स्वरूपात रूपांतर होऊन पचण्यास हलकी-सुलभ बनतात. पिष्टमय पदार्थाचे रूपांतर द्विशर्करेत झाल्यामुळे चवीला गोड लागतात. या शिवाय सर्व जीवनसत्त्वांचे प्रमाण वाढते. रायबोफ्लेविन (जी.ब२) चे प्रमाण १० ते १५% वाढते. मोड येण्यापूर्वी धान्यात जी 'क' नसते तर मोडाच्या प्रक्रियेमुळे ते धान्यात निर्माण होते. अंकुरीत करण्याच्या कालावधीनुसार जी 'क' चे प्रमाण वेगवेगळे असते.

कडधान्य १०० ग्रॅम	मोड आणण्याचा कालावधी		उष्णतामान से.ग्रेड	जी 'क'ची निमिती मि.ग्रॅ.
वाळलेले कडधान्य	भिजवण्याचे तास	मोड येण्यास तास	४० ते ४५ सें. ४० ते ४५ सें. ४० ते ४५ सें.	७-८ १०-१२ १२-१४
	८ ते १०	२४		
		४८ ७२		

मोड आणण्यामुळे लोह व कॅल्शियमचे शोषण होते. तसेच कडधान्याचा वातुळपणा कमी होतो. कडधान्ये मऊ होतात. त्यामुळे

शिजण्यास वेळ कमी लागून इंधनाची बचत होते व पोषक घटकांचा नाश कमी होतो.

खमिरीकरण (Fermentation)

'खमीर' हा सूक्ष्म जंतू आहे. या जंतुमुळे अन्नपदार्थात घडून येणाऱ्या बदलाला खमिरीकरण किंवा आंबवणे म्हणतात. खमीर हा एकपेशीय जंतू हवेमध्ये असतात. खमिराची वाढ ० ते ४५ सें. तापमानात, तसेच आम्लयुक्त व शर्करायुक्त पदार्थात चांगली होते. खमीरालाच Yeast म्हणतात. खमीर दोन प्रकारचे असते.

- १) खाण्यास योग्य खमीर
- २) विषारी खमीर

खाण्यास खमीर अन्नघटकांनी परिपूर्ण असतात. त्यामध्ये कार्बन, हायड्रोजन, नत्र, सल्फेट, कॅल्शियम ही मूलद्रव्ये असतात. खमीराच्या वाढीसाठी आर्द्रता व विशिष्ट तापमानाची आवश्यकता असते. खमीरामुळे पदार्थ फुगण्याची क्रिया होते. खमीरामुळे कर्बोदकांचे (शर्करेचे) अल्कोहल व CO_2 मध्ये रूपांतर होऊन पदार्थ फुगतो. सच्छिद्र व हलका बनतो. अल्कोहल तयार होण्याची सतत सुरु राहिल्यास सेटीक आम्ल तयार होते. फळांच्या रसापासून वेगवेगळे मद्य बनवण्यासाठी खमीराचा उपयोग होतो. तसेच Vinegar (सिरका) तयार केले जाते.

खमिरीकरण केलेल्या पदार्थात पोषक घटकांचे प्रमाण वाढते. त्यामुळे पदार्थाची गुणवत्ता/दर्जा वाढतो. विशेषतः प्रथिने, कर्बोदके, जीवनसत्त्व ब१, ब२, ब३, चे प्रमाण दुपटीने वाढते. तसेच जी 'क' फोलीक आम्ल व लोहाचे प्रमाण वाढते. आंबवल्यामुळे पदार्थाची रुची वाढते. पदार्थ पचनास हलका बनतो.

खमिरीकरण करून केलेले पदार्थ इडली, दोसा, ढोकळा, ब्रेड, जिलेबी, गव्हाच्या कुरड्या करण्यासाठीचे पीठदेखील खमिरीकरणाचेच उदाहरण आहे. अनारशाचे पीठ बगैरे. खमीरीकरणामुळे अन्नपदार्थाचा पोषणदर्जा वाढून आहारात रुचीवैचित्र्य निर्माण करण्यास फायदेशीर ठरते. त्यासाठी आहारात अधूनमधून आंबवलेले पदार्थ समाविष्ट करावेत.

पूरक पदार्थाचा पुरवठा/पूरकता (Supplementation)

व्यक्तीच्या आवश्यकतेनुसार समतोल आहाराचे आयोजन करताना सर्व पोषक घटकांचा पुरवठा होण्यासाठी सर्व अन्नगटातील पदार्थांचा आहारात वापर करावा लागतो. एक प्रकारच्या अन्नपदार्थात सर्व पोषक घटके योग्य प्रमाणात नसतात. त्यासाठी जाणीवपूर्वक दुसऱ्या पूरक पदार्थाचा उपयोग करावा लागतो. विशेषतः नत्राम्ल, जीवनसत्त्वे व खनिजद्रव्ये मिळविण्यासाठी एका भोज्य पदार्थाबरोबर दुसरा भोज्य पदार्थ वापरून पदार्थाचे पोषणमूल्य वाढवता येते.

सामान्य आहारात काही विशिष्ट खाद्यपदार्थांना विशिष्ट पोषक घटकांची गरज पूर्ण होण्याच्या हेतूने जाणीवपूर्वक समाविष्ट करणे यालाच पुरवणी/पूरकता किंवा खाद्य पुरवणी असे म्हणतात. वाढत्या वयात मुलांना तसेच गरोदर स्त्री व स्तनदा माता यांना जास्त प्रथिनांची गरज असते. ही प्रथिने उच्च प्रतीची किंवा पूर्ण प्रथिने असणे जरूरी असते. त्यासाठी प्राणीज प्रथिनेयुक्त पदार्थ ज्यातून पूर्ण प्रथिने मिळतात उदा. मांस, मासे, अंडी, दूध, दुधाचे पदार्थ पण वनस्पतीज पदार्थातील प्रथिने दुय्यम प्रतीची असतात. तेव्हा शाकाहारी लोकांना पूर्ण प्रथिने मिळविण्यासाठी पुरवणीची आवश्यकता असते. त्यासाठी तृणधान्ये

व डाळींचा एकत्रित वापर (उदा. इडली, दोसा, उत्तप्पा, थालीपीठ, धपाटे, खिचडी) करावा. धान्यात नसणारे लायसिन डाळीत असते. डाळीत नसणारे मिथियोनाइन तृणधान्यात असते. म्हणून हे दोन अन्नगट पूरक गट समजले जातात. याशिवाय तृणधान्य डाळींचा, दूध दुधाचे पदार्थांबरोबर एकत्रित वापर (शेवयाची/रव्याची/वाटाण्याची खीर, दहीवडा, इडलीसांबर, खव्याची पोळी, दुधाची दशमी, दह्याचे थालीपीठ/धपाटे) याशिवाय तृणधान्य डाळीसोबत भाज्यांचा उपयोग उदा. भाज्या घालून पराठे, कोशिंबीरी, रायते, पुलावसाठी विविध भाज्या, पनीरचा उपयोग केला जातो. पूरक पदार्थांचा/घटकांचा पुरवठा होऊन पदार्थांचा पोषणदर्जा वाढतो. भाज्या व फळामधून क्षार व जीवनसत्त्वांचा पुरवठा होतो आणि तृणधान्ये, डाळी यातून प्रामुख्याने कर्बोदके प्रथिनाची गरज पूर्ण होते. अशा रीतीने अन्नपदार्थात पुरवणी करून आहाराचा पोषणदर्जा वाढवता येतो.

पर्यायी पदार्थ आहार (Substitution)

सामान्यपणे भारतीय आहारात तृणधान्ये जास्त प्रमाणात त्या खालोखाल डाळी व भाज्यां उपयोग केला जातो. तर दूध, अंडी व इतर प्राणी पदार्थांचे प्रमाण अतिशय कमी दिसून येते. बरेच वेळा सर्व गटातील अन्नपदार्थांचा योग्य प्रमाणात समावेश न केल्यामुळे आहार असंतुलित होऊन कुपोषणाची समस्या उद्भवते. आहार या संकल्पनेत खाद्यपदार्थ, खाद्य वस्तू व जेवणाखाण्याचा बेत यांचा समावेश होतो. आहारात विविधता निर्माण करण्यासाठी तसेच पोषक घटकांची आवश्यकता पूर्ण करण्यासाठी छत्रछत्र ने पर्यायी अन्नगटाची व त्यात समाविष्ट अन्नपदार्थांचा वापर करण्याची संकल्पना निर्माण केली. जी Exchange list नावाने जाते.

अदलाबदल यादी (Exchange list)

म्हणजे विशिष्ट प्रमाण असलेल्या अन्नपदार्थांचा समूह. ज्यातून साधारणतः समान प्रमाणात प्रथिने, उष्मांक व स्निग्धे मिळतात. या गटातील अन्नपदार्थांचे संख्यात्मक प्रमाण वेगवेगळे असू शकते. मात्र त्यातून मिळणारे प्राथमिक पोषक घटकांचे (प्रथिने, कर्बोदके, स्निग्ध) प्रमाण जवळपास सारखे असते. म्हणून एका अदलाबदल यादीतील एका पदार्थाऐवजी त्याच यादीतील दुसरा कोणताही पदार्थ निवडता येतो. एखादा विशिष्ट आजार किंवा वयोगटातील व्यक्तीसाठी आहार नियोजन करताना अन्नपदार्थांची निवड करण्यासाठी अशी यादी मार्गदर्शक व उपयुक्त ठरते.

एकूण आठ अदलाबदल यादी खालील प्रमाणे आहेत.

- १) दूध अदलाबदल यादी
- २) डाळी आणि कडधान्ये अदलाबदल यादी
- ३) मांसाहारी अन्नपदार्थ अदलाबदल यादी
- ४) भाज्यातील अदलाबदल यादी (अ)
- ५) भाज्यातील अदलाबदल यादी (ब)
- ६) फळे अदलाबदल यादी
- ७) तृणधान्ये अदलाबदल यादी
- ८) स्निग्धातील अदलाबदल यादी

पर्यायी म्हणजे एकाच्या ऐवजी दुसरे

- १) कोणतीही एक खाद्यवस्तू दुसऱ्या खाद्यवस्तूला १०० टक्के

पूर्णपणे पर्यायी नसते. कारण त्यात असणाऱ्या एखाद्या पोषक घटकाचे प्रमाण समान असू शकते. (उदा. कोंबडीचे १ अंडे, २५ ग्रॅमचा चीजचा एक तुकडा एकमेकाला पर्याय म्हणून खाता येतात. कारण त्यातून सुमारे ६ ग्रॅ. प्रथिने मिळतात.) पण त्यातील इतर पोषक घटकांचे प्रमाण वेगळे असते.

२) पर्याय कधीतरी किंवा अपवादात्मक परिस्थितीत वारंवार किंवा काही वेळा कायमचा करावा लागतो. उदा. उपवासाच्या दिवशी जेवणाखाण्याचा बेत दैनंदिन जेवणापेक्षा निराळा असतो. तसेच काही विकारात पथ्याच्या आहाराचा एक भाग म्हणून काही अन्नपदार्थ वर्ज्य करावे लागतात व आहार संतुलित बनविण्यासाठी पर्यायी खाद्यपदार्थांचा आहारात उपयोग करावा लागतो. उदा. दुधाची अॅलर्जी असणाऱ्या रुग्णाला दूध वर्ज्य असल्यामुळे पर्यायी खाद्यपदार्थातून प्रथिने, कॅल्शियमसारखी पोषक घटके मिळवावी लागतात. (पर्याय म्हणून तृणधान्ये + डाळीचा वापर) मांसाहारी पदार्थ न खाणाऱ्यांना त्यातून मिळणारी पोषकद्रव्ये मिळविण्यासाठी शाकाहारातील खाद्यपदार्थ पर्यायी प्रमाणात खावे लागतात.

३) खाद्य वस्तूंचे पर्याय विशिष्ट पोषक द्रव्यांच्या बाबतीत असतात. उदा. एक चहाचा चमचा खाद्यतेल, दीड टेबलस्पून शेंगादाण्याचे कूट, १ टे स्पून तीळ हे ५ ग्रॅ. स्निग्ध पदार्थ पुरविणारे एकमेकांचे पर्याय आहेत. पर्यायी खाद्यवस्तू त्याच असल्यातरी त्यांचे पर्यायी वाढप संबंधित पोषक घटकानुसार बदलते. उदा. कॅल्शियमच्या संदर्भात १ कप म्हशीच्या दुधाचे पर्याय: १.३ / ४ कप गाईचे दूध किंवा १/ २ वाटी किसलेले चीज (प्रत्येकी ३०० मि. ग्रॅ. कॅल्शियम) परंतु प्रथिनांच्या संदर्भात १ कप म्हशीच्या दुधाचे पर्याय: १/२ कप गाईचे दूध १३ वाटी किसलेले चीज (प्रत्येकी ६.५ ग्रॅ. प्रथिने)

४) पोषक द्रव्यांच्या बाबतीत पर्यायी खाद्यवस्तू निश्चित करताना, त्यातील आरोग्याला हानिकारक पोषक घटके किंवा आरोग्यासाठी फायदेशीर असणाऱ्या पोषक घटकांचा अभाव इत्यादी गोष्टी विचारात घ्याव्या लागतात. उदा. १ चमचा तूप व एक चमचा तेलातून ५ ग्रॅ. स्निग्ध मिळत असले तरी तुपात संपृक्त स्निग्धाम्ले, कोलेस्टेरॉल ही अपायकारक घटक असतात. तर तेलात संपृक्त स्निग्धाम्ले कमी प्रमाणात (अपवाद खोबरेल तेल) व कोलेस्टेरॉल अजिबात नसते. तसेच तुपात अत्यावश्यक स्निग्धाम्लाचा अभाव असतो. म्हणून एखाद्या दिवशी १ ते २ चमचे तेलाऐवजी तुपाचा पर्याय म्हणून उपयोग करणे योग्य ठरेल; परंतु आहारातील संपूर्ण तेलाच्या ऐवजी तूप खाणे शरीरासाठी हानिकारक ठरू शकते.

५) काही महत्त्वाची पोषक घटके मिळविण्यासाठी काही वेळा दोन गटांतील खाद्यपदार्थ एकमेकांना पर्याय म्हणून वापरता येतात. उदा. एक चहाचा चमचा तेलाऐवजी (स्निग्ध ५ ग्रॅ., उष्मांक ४५ ग्रॅ., पाव वाटी खसखस, (स्निग्ध ५ ग्रॅ., प्रथिने ५ ग्रॅ., कॅल्शियम ३९० मि.ग्रॅ., - लोह ४ मि.ग्रॅ. उष्मांक १००) किंवा मध्यम आकाराचे ७ बदाम (स्निग्ध ५ ग्रॅ., प्रथिने २ ग्रॅ., कॅल्शियम २३ मि.ग्रॅ., लोह ०.५ मि.ग्रॅ., उष्मांक ६५) खाल्ल्यास त्यातून स्निग्धाव्यतिरिक्त इतर महत्त्वाची पोषक घटके मिळतात.

अशाप्रकारे पर्याय वापरल्याने आहार संतुलित होऊन विविधता

निर्माण करता येते. आहारतज्ज्ञ व डॉक्टरांचे मार्गदर्शन घेऊन खाद्यपदार्थांचे प्रमाण, पोषक घटकांचे अचूक प्रमाण उष्मांकाचा फरक या गोष्टी निश्चित कराव्यात.

संदर्भ सुची

१. वाघमारे, शोभा (२००८) : पोषण आणि आहार; विद्या बुक पब्लिशर्स , औरंगाबाद
२. रौल, व्ही. जे. (२००६) : पोषण आहार; गोडवा कृषी प्रकाशन, पुणे
३. मांडले, किशोर (२००२): आहार आणि आरोग्य, उद्यमनगरी प्रकाशन, पुणे



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एस.वाय.बी.एड.

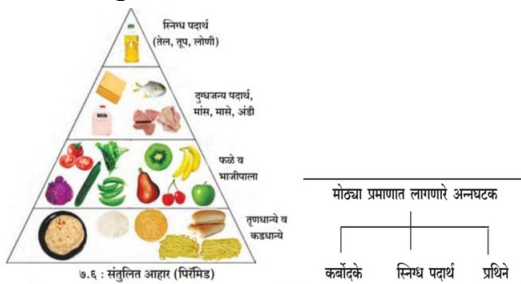
के. सी. ई. सो. चे शिक्षणशास्त्र आणि शारीरिक शिक्षणशास्त्र महाविद्यालय, जळगाव

प्रस्तावना

अन्न ही मानवाची मूलभूत गरज असते. गहू, तांदूळ, डाळी, कडधान्य यांसारख्या विविध अन्नधान्याचा आपल्या आहारात समावेश असतो. त्यासोबतच दूध, दुधाचे पदार्थ, अंडी यांसारख्या घटकांची आपल्याला गरज भासत असते. प्रत्येक देशाने आपापल्या स्तरावर आवश्यक व पुरेसे अन्न मिळावे म्हणून कायदे केले आहेत ते अन्नसुरक्षेचे कायदे म्हणून ओळखले जातात. केंद्र शासनाने २०१३ साली राष्ट्रीय अन्नसुरक्षा कायदा संमत केला होता. त्यानंतर विविध राज्यात त्याची अंमलबजावणी करण्यात आली. देशातील जवळपास ८१ कोटी जनतेला या कायद्यामुळे सवलतीचा दरात अन्नधान्य मिळते. राष्ट्रीय अन्नसुरक्षा कायद्यामुळे शिधापत्रिका मार्फत गहू, तांदूळ किंवा प्रमुख तृणधन्य असा संतुलित आहार आपल्याला मिळत असते. अन्नपदार्थ ज्या घटकांनी बनलेले असतात त्यांना पोषकद्रव्ये (nutrients) म्हणतात आपल्याला आहार कशाही प्रकारचा असो, आपले अन्न तीन मुख्य प्रकारचे बनलेले असते: स्निग्ध पदार्थ (fats), प्रथिने (proteins) आणि पिष्टमय पदार्थ (Carbohydrates) यांच्या शिवाय आपल्या शरीराला पाणी, मीठ, जीवनसत्वे, साखर अशा इतर पदार्थांची गरज असते

संतुलित आहार

आपल्या आहारात सर्व प्रकारची प्रथिने, पिष्टमय पदार्थ, स्निग्ध पदार्थ, जीवनसत्वे आणि खनिजे अशा पोषक पदार्थांचा समावेश असला पाहिजे. कोणत्याही एकाच खाद्यपदार्थात हे घटक योग्य प्रमाणात मिळणे शक्य नसल्याने या सर्व घटकांचे सुयोग्य प्रमाण रोजच्या आहारात विविध पदार्थ समाविष्ट करून साधले पाहिजे, ज्याने आपले शरीर निरोगी राहील आशा आहारास संतुलित आहार म्हणतात.



१. पिष्टमय पदार्थ

पाणी, साखर, मुळा, कार्ल इत्यादी पदार्थात आपल्याला पिष्टमय पदार्थ आढळतात. साखर ही ९० टक्के पिष्टमय आहे. भाजीपाला, फळे आणि डाळीचे कवच (टरफल) हे पदार्थ जास्तीत जास्त पिष्टमय पदार्थ साठवून असतात, पिष्टमय पदार्थांना कार्बोदके असेही म्हटले जाते. आहाराचा सर्वात महत्वाचा पदार्थ म्हणजे पिष्टमय पदार्थ होय. जमिनीवर उगणारी जी काही फळे, पालेभाज्या असतात. त्यामधील बहुतेक घटकात पिष्टमय पदार्थ असतात. तुम्ही जर का विचार केला तर आपल्या भारतीय लोकांच्या आहारामध्ये कमीत कमी ५०-६० टक्के तर जास्तीत जास्त ७५-८० टक्के कार्बोदके म्हणजेच पिष्टमय पदार्थांचा समावेश असतो म्हणजेच जवळपास आपल्या आहाराचा बहुतेक भाग कार्बोदकांनी व्यापलेला असतो.

कार्बोदके दोन प्रकारची असतात ती म्हणजे साधी आणि जटिल स्वरूपाची कार्बोदके. दिवसाची सुरुवातच आपली कार्बोदके पासून होत असते. सकाळी उठल्यावर चहा घेताच म्हणजेच साखर आपल्या शरीरात मिळते. अशा या गोड लागणाऱ्या अन्नपदार्थांमध्ये विविध प्रकारच्या शर्करा असतात. उसाच्या रसापासून आपण गुड किंवा साखार बनवू शकतो कारण त्यात सुक्रोज नावाची शर्करा असते. पिकलेला आंबा, केळी, चिकू अशी फळे तसेच मद्य यातही वेगवेगळ्या प्रकारच्या शर्करा असतात



पिष्टमय पदार्थ

२. स्निग्ध पदार्थ

रोजच्या आहारात समाविष्ट होणारा स्निग्ध पदार्थ हा देखील खूप महत्वाचा स्रोत मानला जातो, तेल हा स्निग्ध पदार्थ आहे. तेल, तूप, लोणी, अश्या स्निग्ध पदार्थापासून आपली ऊर्जेची गरज थोड्या प्रमाणात भागते, स्निग्ध पदार्थ हे निरनिराळ्या अन्नपदार्थात लपलेले स्निग्धांश (उदा. मक्याच्या दाण्यांतले तेल, गव्हाच्या दाण्यांतले तेल, इ.) असतात.

अन्नातील स्निग्ध पदार्थापासून शरीराला ऊर्जा मिळते. आपल्या आहारात हे पदार्थ पिष्टमय पदार्थापेक्षा कमी प्रमाणात असतात. दुधापासून मिळणारी साय, लोणी, तूप वनस्पतीपासून मिळणारे तेल ही स्निग्ध पदार्थांचे उदाहरण आहेत. यांशिवाय मांस, अंड्यातील बलक यातही स्निग्ध पदार्थ असतात.

आहारात आलेल्या स्निग्ध पदार्थापासून शरीराला चरबी तयार होते. काही काळ अन्न मिळाले नाही तर या चरबी पासून शरीराला ऊर्जा मिळते.

वाढत्या वयातील मुला-मुलींना रोज साधारण पणे २०००-२५०० किलोकॅलोरी ऊर्जेची गरज असते.



स्निग्ध पदार्थ

३. प्रथिने

मातीची मडकी बनविण्यासाठी ज्याप्रमाणे माती, राख, काळी माती आणि त्याची बनवण्याची कला या सर्व गोष्टींची आवश्यकता असते त्याचप्रमाणे आपल्या शरीराच्या वाढीसाठी प्रथिनेची गरज असते. शरीराच्या वाढीसाठी, शरीराची होणारी झिज भरून काढण्यासाठी व इतर जीवनक्रियांसाठी आवश्यक असलेली प्रथिने म्हणजेच कडधान्य, दूध तसेच मास आणि अंडी.

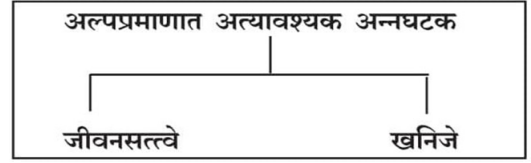
प्रौढ व्यक्तीस आपल्या स्नायूच्या बळकटीसाठी प्रथिनांची गरज असते. वजन कमी करण्यास ही मदत होते तसेच आपल्या शरीराची रोगप्रतिकारशक्ती वाढवणे हेही त्याचे मुख्य कार्य असते. वयोवृद्ध व्यक्तींना सर्कोपोनिया (स्नायूंचे नुकसान) टाळण्यासाठी प्रथिने अत्यंत आवश्यक आहे आणि ते आजारपणानंतर जलद आणि लवकर बरे होण्यास मदत करते.

प्रथिने ही अमिनो आम्लची बनलेली असतात. प्रथिने पुरेशे प्रमाणात मिळाले नाही तर शरीराची वाढ खुंटते. माणसाला सतत थकवा वाटतो. अभ्यासात तसेच खेळात व इतर कामातही उत्साह वाटत नाही. तसेच जीवनसत्वाच्या किंवा खनिजांच्या अभावामुळे काही विशिष्ट आजार होऊ शकतात.



प्रथिनांचे मुख्य स्रोत

४. जीवनसत्व व खनिजे



अन्न घटकात अतिशय थोड्या म्हणजेच अल्प प्रमाणात गरज पडणारा घटक म्हणजे जीवनसत्त्वे व खनिजे यामध्ये पाण्याची भूमिका ही खूप महत्वाची असते. अशा काही जीवनसत्व व खनिजांमुळे मानव हा शारीरिक व मानसिक दृष्ट्या निरोगी असते. संतुलित आहारातील हा एक महत्वपूर्ण घटक आहे.

आपल्या शरीराच्या वाढीसाठी आणि निरोगी राहण्यापाठी आवश्यक असलेल्या पोषक तत्वांपैकी जीवनसत्त्वे आणि खनिजे ही दोन तत्त्वे महत्वाची आहेत जीवनसत्त्वे ही तेरा प्रकारची असतात. ती म्हणजेच जीवनसत्त्व अ, क, ड, ई, के आणि बी-कॉम्प्लेक्स (थायमिन, राइबोफ्लेविन, नियासिन, पॅन्टोथेनिक एसिड बायोटीन इ१२, इ६ आणि फोलेट). जीवनसत्त्वे अ, ड, ई, के मेदाविद्राव्य (फॅट सोल्युबल) असतात, आणि उर्वरित जीवनसत्त्वे जलविद्राव्य (वॉटर सोल्युबल) असतात.

वॉटर सोल्युबल जीवनसत्त्वे पेशींमध्ये सहजपणे शोषली जातात. तसेच शरीरातून सहजपणे बाहेर पडतात. त्यामुळे त्यांची विषबाधा (Toxicity) होण्याची रिस्क कमी असते, पण त्यांचे शरीरात योग्य प्रमाण राखण्यासाठी आहार हा नियमितपणे सेवन करावे लागतो. याउलट फॅट सोल्युबल जीवनसत्त्वे सहजपणे शरीरातून बाहेर पडत नाहीत, फॅटी टिशुमध्ये साठवले जाते. त्यामुळे विषय होण्याची शक्यता असते.

खनिजे

- **लोह** : शरीराच्या सर्व भागांपर्यंत ऑक्सिजनचे वहन करणे. मांस, पालक, सफरचंद, मनुका ही त्याची स्रोत आहेत.
- **कॅल्शियम, फॉस्फोरस** : दांत, हाडे मजबूत करणे. दूध, दुग्धजन्य पदार्थ, हिरव्या पालेभाज्या, मांस ही त्याची स्रोत आहेत.
- **आयोडीन** : वाढीस नियंत्रण, शरीरात होणाऱ्या रासायनिक क्रिया गतिमान होणे. मासे, मीठ, समुद्रातून मिळणारे अन्नपदार्थ ही त्याची स्रोत आहेत.
- **सोडियम व पोटॅशियम** : शरीरात पाण्याचे संतुलन राखणे, चेतसंस्था व स्नायूचे क्रिया चालू ठेवणे. मीठ, पालेभाज्या, फळे, डाळी, चीज ही त्याची स्रोत आहेत.

निष्कर्ष

- १) वरील बाबी लक्षात घेता संतुलित आहार घेतला तर आपण नक्कीच मानसिक व शारीरिकदृष्ट्या स्वस्थ राहू शकतो.
- २) संतुलित आहार घेतल्याने आपली शक्ती वाढते. रोगप्रतिकार प्रणाली सुरक्षित राहते.
- ३) आपल्या शरीराला संतुलित आहार खूप महत्वाचा आहे म्हणून पिष्टमय पदार्थ, स्निग्ध पदार्थ, प्रथिने, जीवनसत्त्वे व खनिजे याचा समावेश आपल्या आहारात असायलाच

पाहिजे. त्यासोबतच पाणी हा शरीरासाठी अत्यावश्यक घटक आहे.

संदर्भ सुची

१. महाराष्ट्र राज्य पाठ्यपुस्तक निर्मिती व अभ्यासक्रम मंडळ, पुणे
परिसर अभ्यास (भाग १), इयत्ता ५वी, ६वी
२. डॉ. सावित्रा (drsavitra .com)
३. Loksatta.com
४. Just For Hearts. (Youtube)
५. eklavya.com



जळगांव शहरातील शारीरिक आरोग्याबाबत जागरूक असणाऱ्या नागरिकांचा सर्वेक्षणात्मक अभ्यास.

श्री आकाश दिपक बिवाल

कवियत्री बहिणाबाई चौधरी उत्तर महाराष्ट्र विद्यापीठ, जळगांव

प्रा.डॉ.एस.डी.चौधरी

डी.डी.भोळे महाविद्यालय, भुसावळ जि.जळगांव

प्रस्तावना

‘शरीरचेष्टा याचेस्टा स्थैय्यार्था बलवर्धिनी ।

देह व्यायाम संख्याता मात्रायांता समाचरेत्॥’

शरीराच्या ज्या क्रियेने शरीर घट्ट बनते व बळ वाढते, त्या क्रियेला व्यायाम म्हणतात. हा व्यायाम बेताने करावा.

शरीराच्या ज्या हालचालींनी शरीर घट्ट म्हणजे पिळदार बनून शक्ती वाढते, त्या हालचालींनी व्यायाम म्हणतात.

मनुष्याला दैनंदिन जीवनामध्ये शरीराची हालचाल करावीच लागते. परंतु त्याला एका जागी किंवा झोपून झालेली हालचाल म्हणजेच व्यायाम केला असे असू शकत नाही. म्हणून शरीर मजबुत करणारी व निरोगी राहणारे व्यायाम करणे गरजेचे ठरते. यापेक्षा वेगळे व सुटसुटीत भाषेत सांगायचे झाल्यास स्नायुवर योग्य तो दाब देणे व सैल सोडणे म्हणजेच व्यायाम होय. शरीराच्या कोणत्याही स्नायुवर दाब पडला आणि तो सैल सोडला तर त्या स्नायुचा पुरेपूर व्यायाम होतो. व्यायाम केल्याने रक्ताभिसरण क्षमता वाढते. स्नायु दाबून धरला आणि सोडला म्हणजे तेथे अधिक रक्ताचा पुरवठा केला जातो. त्यामुळे त्या स्नायुला रक्तातील पोषक रस अधिक प्रमाणात मिळतो आणि तो स्नायु अधिक जाड व बळकट त्याच प्रमाणे त्याची कार्यक्षमता वाढते. म्हणजेच निरोगी राहून आपले काम अधिक चांगले करण्यास मदत होते. शरीरातील सर्व स्नायू बळकट झाले म्हणजे तो मनुष्य पूर्णपणे आरोग्य संपन्न व निरोगी होतो. काही लोक तरुण पणात जोर बैठका किंवा असे काही व्यायाम भरपूर करतात आणि पुढे पूर्णतः सोडून देतात. आपण पुर्वी व्यायाम केला आहे, मला काहीच होणार नाही असा एक गैरसमज असतो. व्यायामाने स्नायुंचे बळ वाढले तर ते स्नायु बरीच वर्ष टिकून राहतात. परंतु त्याचा वापर झाला नाही तर शरीर त्यातही काटछाट करते.

आरोग्याकडे बघण्याचा दृष्टीकोन कसा असावा. याबद्दल एका लेखकाने म्हटले आहे की. failing to plan is planning to fail कुठल्याही क्षेत्रात यशस्वी होण्यासाठी दुरदृष्टी ठेऊन नियोजन करणे फार महत्वाचे आहे.

जीवनामध्ये आपण करीअर, संपत्ती एवढेच तर लोकांशी संबंध ठेवतानाही भविष्याचा विचार करतो. परंतु ज्याच्या बळावर आणि

ज्याच्यासाठी आपण हे सर्व भविष्य नियोजन करतो त्या शरीराला आपण किती गृहित धरतो की नाही? आपले आरोग्य जर चांगले राहिले नाही तर आपण केलेले सर्व मनसुबे व्यर्थ नाही का जाणार? म्हणूनच आपले शरीर आपले आरोग्य वृद्धावस्था येईपर्यंत धडधाकट कसे राहील, याचे सर्व प्रथम दुरदृष्टी नियोजन करणे आवश्यक आहे. आपण सर्वांनी आज आरोग्याची काळजी घ्यायला हवी.

संशोधनाची गरज

जागतिक आरोग्य संघटनेच्या मते ८५% लोक बैठे काम करतात. ही संख्या खूप मोठी आहे. याचे परिणाम गंभीर असू शकतात. सतत बैठे काम करणे उच्च रक्तदाब, स्थूलता, धूम्रपानाइतकेच घातक असतं. यासाठी व्यायाम आणि डाएट एकत्रितपणे निवडा. व्यायामाने कॅल्शियम बर्न करता येतात तर आहारातून कमीत-कमी कॅल्शियम घेता येऊ शकतील. व्यायाम करायचा थांबवल्याने तुमचे फिट आणि तंदुरुस्त शरीर हळूहळू पुर्वीप्रमाणे बेढव होऊ लागते. तसेच व्यायाम करत असताना तुम्ही ज्या प्रमाणात आहार घेत होता तो व्यायामानंतरही चालू ठेवलात तर कॅल्शियम बर्न होत नसल्यामुळे आपोआप वजन वाढेल. त्यासाठी व्यायाम हा तुमच्या दिनचर्येचा भाग असावा. सततची बैठी काम शरीराला सुस्त बनवितात जे शारीरिक आरोग्याच्या दृष्टीने फारच घातक असते. चालणे (walking) हे व्यायाम तुम्हाला कसा वाटतो? रोजच्या चालण्याने वजन तर घटतेच परंतु तणाव, रक्तदाबावरही नियंत्रण राहतं. तुम्ही स्वतः कबुल केल्या की, तुम्ही मानसिक काम करता, शारीरिक नाही. शरीराच्या लवचिकतेसाठी व्यायामाची आवश्यकता असते.

संशोधनाची उद्दिष्ट्ये

- १) जळगांव शहरातील किती नागरीक आपल्या शारीरिक आरोग्याबाबत जागरूक आहेत याची नोंद घेणे.
- २) जागरूक नागरीकांमध्ये पुरुषांचे प्रमाण तपासणे.
- ३) जागरूक नागरीकांमध्ये स्त्रीयांचे प्रमाण तपासणे.

परिकल्पना

शुन्य परिकल्पना : जागरूक नागरिकांमध्ये पुरुष व महिलांच्या प्रमाणात कोणताही फरक आढळून येणार नाही.

मर्यादा

सदर संशोधनात संशोधकाचे नागरिकांवर कोणत्याही प्रकारे नियंत्रण नाही.

व्याप्ती

- १) सदर संशोधन हे जळगाव शहरातील शारीरिक आरोग्याबाबत जागरूक असणाऱ्या नागरिकांसाठी मर्यादित आहेत.
- २) सदर संशोधन हे जळगाव शहरातील अ) एकलव्य क्रीडा संकुल मैदान, जळगाव, ब) बहिणाबाई चौधरी उद्यान जळगाव, क) काव्य रत्नावली चौक, जळगाव, ड) सागर पार्क, जळगाव ठिकाणापुरतीच मर्यादित आहे.
- ३) सदर संशोधन हे २०१६-१७ या वर्षापुरते मर्यादित आहे.

संशोधनाची कार्यपद्धती**नमुना**

- सदर संशोधनात जळगाव शहरातील नागरिकांची नमुना निवड केलेली आहे.
- सदर संशोधनात संशोधकाने यादृच्छिक न्यादर्श पद्धतीने नमुना निवडलेला आहे.
- संशोधनात एकलव्य क्रीडा संकुल मैदान, जळगाव, बहिणाबाई चौधरी उद्यान, जळगाव, काव्य रत्नावली चौक, जळगाव, सागर पार्क जळगाव या ठिकाणांच्या नागरिकांची नमुना निवड केलेली आहे.

साहित्य साधने

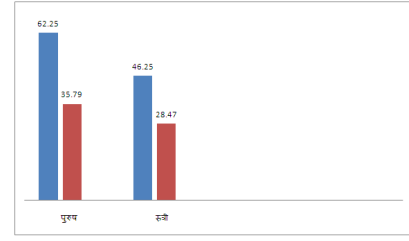
प्रस्तुत संशोधनात संशोधकाने जळगाव शहरातील किती नागरिक शारीरिक आरोग्याबाबत जागरूक आहेत, त्याच्या नोंदी बाह्य निरीक्षणावरून घेतल्या आहेत.

माहितीचे संकलन

सदर संशोधनात संशोधकाने माहिती संकलीत करण्यासाठी जळगाव शहरातील विविध ठिकाणी व्यायामासाठी येणारे नागरिकांचे बाह्यनिरीक्षण करून त्याबद्दल नोंदी घेतली. त्या प्राप्त माहितीची वर्गवारी करून त्याचे संकलन करण्यात आले आहेत.

निकाल**पुरुष आणि स्त्री**

वर्गवारी	मध्यमान	प्रमाण विचलन	प्रसारण विक्षेपण
पुरुष	६२.२५	३५.७९	०.७१६०४३*
स्त्री	४६.२५	२८.४७	

सार्थक नाही.**चर्चा**

संकलित झालेल्या माहितीच्या आधारे खालील निकाल प्राप्त झाले. जळगाव शहरातील शारीरिक आरोग्याबाबत जागरूक असणाऱ्या नागरिकांमध्ये पुरुष वर्गवारीचे मध्यमान ६२.२५ व प्रमाण विचलन ३५.७९ आढळले त्याचप्रमाणे स्त्री वर्गवारीचे मध्यमान ४६.२५ व प्रमाण विचलन २८.४७ आढळले या दोन वर्गवारी मधील प्रसरण विश्लेषण सार्थक आढळले नाही. जे की ०.७१६०४३ आहे.

सुभासिनी यांनी २००८ साली केलेल्या संशोधनाचा आधार घेऊन प्रसरण विश्लेषण सार्थक आढळले नसल्याने टि-चाचणीचा वापर करण्यात आला नाही.

निष्कर्ष

प्रथम निरीक्षणावरून असे दिसून आले की, वाढत्या वयोमानानुसार मैदानावर येणाऱ्या नागरिकांची संख्या जास्त आहे.

संदर्भ सुची

- १) Crl. L. Nordly-Study of the Physical Education Facilities and Equipment in the University of Minesota. Research Quarterly (1993)
- २) De Rnae Coop- Study of the Physical Education programme for boys in selected private school of the state Haweli. (Dissertation bstracts International May, 1972)
- ३) Don R. Kirkendall, Joseph J. Gruber Cetial (1987) Measurement and Evaluation of Physical Education (IInd Edition) Human Publishers, in Champaighillinais.
- ४) डॉ. सुरेशचंद्र नाडकर्णी (१९८९) - क्रीडा ज्ञानकोश शालिनी प्रकाशन, पुणे.
- ५) भितांडे वि.रा.(१९९९)-शैक्षणिक संशोधन पद्धती नुतन प्रकाशन, पुणे.
- ६) पंडीत ब.बी.(२००१)-शिक्षणातील संशोधन (संख्यात्मक आणि गुणात्मक) नुतन प्रकाशन, पुणे.



योग प्रशिक्षणाचा वुडबॉल खेळाडूंच्या शक्ती या घटकावर होणाऱ्या परिणामांचे अभ्यास

हेमंत भाऊ पयेर
संशोधक विद्यार्थी

प्रा. डॉ. प्रमोद रामदास चौधरी
प्रभारी प्राचार्य

धनाजी नाना चौधरी विद्याप्रबोधिनी संचालित डॉ.शिरीष मधुकरराव चौधरी महाविद्यालय, जळगाव

गोषवारा

या अभ्यासाच्या उद्दिष्टानुसार योग प्रशिक्षणाचा वुडबॉल खेळाडूंच्या शक्ती या घटकावर होणाऱ्या परिणामांचे अभ्यास करण्यासाठी पूर्व आणि उत्तर चाचणीचा वापर करण्यात आला आहे. २० वुडबॉल खेळाडूंची यादृच्छिकपणे प्रायोगिक गट आणि नियंत्रित गटांमध्ये विभागणी करण्यात आली. प्रायोगिक गटास ०६ आठवड्यांच्या योग प्रशिक्षण देण्यात आला तर नियंत्रण गटाला कोणताही प्रशिक्षण देण्यात आला नाही. परिणामांवरून दिसून आले की प्रायोगिक गटास नियंत्रित गटाच्या तुलनेत शक्तीमध्ये लक्षणीय सुधारणा झाली आहे. वुडबॉल खेळाडूंची शक्ती सुधारण्यासाठी योग हा एक प्रभावी मार्ग असू शकतो असे निष्कर्ष सुचवतात.

कीवर्ड : योग, शक्ती, वुडबॉल, पूर्व चाचणी, उत्तर चाचणी
प्रस्तावना

वुडबॉल हा तैवानमध्ये उगम झालेला आणि जगभरात लोकप्रिय होत असलेला खेळ आहे. गोल्फ प्रमाणे खेळला जाणारा भारतासह जगभरात लोकप्रिय होत असलेला खेळ म्हणजे 'वुडबॉल' होय. शक्य तितक्या कमी स्ट्रोकसह, मॅलेट वापरून गेट्सच्या मालिकेतून लाकडी चेंडू मारणे हा खेळाचा उद्देश आहे. वुडबॉल हा खेळ गोल्फ व क्रोकेट या खेळांच्या मिश्रणातून तयार केला आहे. या खेळासाठी शारीरिक आणि मानसिक अशा दोन्ही सद्गुणा आवश्यक असतात आणि या खेळात चांगली कामगिरी करण्यासाठी खेळाडूंच्या शक्ती, संतुलन आणि अचूकता असणे आवश्यक आहे. अनेक क्रीडापटू विविध खेळांमध्ये आपली कामगिरी सुधारण्याचा मार्ग म्हणून योगाकडे वळतात. योग ही एक शारीरिक, मानसिक आणि आध्यात्मिक साधना आहे जी प्राचीन भारतात उगम पावली. योगशास्त्रात शारीरिक आणि मानसिक आरोग्यास प्रोत्साहन देणारी विविध आसने, ध्यान, मुद्रा आणि श्वासोच्छवासाची तंत्रे समाविष्ट आहेत. बास्केटबॉल, हॉकी आणि मैदानी विविध खेळांमध्ये योगासने खेळाडूंची कामगिरी वाढवतात असे दिसून आले आहे. तथापि, वुडबॉल खेळाडूंचा योगाच्या विशिष्ट परिणामांवर मर्यादित संशोधन आहे. म्हणून, योग प्रशिक्षणाचा वुडबॉल खेळाडूंच्या शक्ती या घटकावर होणाऱ्या परिणामांचे अभ्यास हा या संशोधनाचा उद्देश आहे.

साहित्याचे पुनरावलोकन

खेळाडूंना योगाचा एक प्राथमिक फायदा म्हणजे लवचिकतेमध्ये वाढ होणे. योगाच्या सरावामध्ये विविध प्रकारचे स्ट्रेचिंग व्यायाम समाविष्ट असतात जे शरीराच्या हालचालींची क्षमता वाढविण्यास मदत करतात. जर्नल ऑफ फिजिकल एज्युकेशन अँड स्पोर्ट्समध्ये प्रकाशित केलेल्या अभ्यासात असे आढळून आले की १२-आठवड्यांच्या योग कार्यक्रमात युवा खेळाडूंचे संतुलन आणि लवचिकता सुधारली (जहरा एट अल., २०१५). प्रतिक्रिया काळ आणि समन्वय सुधारण्यासाठी योग उपयोगी ठरतो. इंटरनॅशनल जर्नल ऑफ योगा मध्ये प्रकाशित केलेल्या अभ्यासात असे दिसून आले आहे की नियमित योगासनांमुळे व्यावसायिक खेळाडूंच्या प्रतिक्रिया काळ आणि समन्वय सुधारला (सिन्हा एट अल., २०१८).

संशोधन पद्धती

रायगड जिल्ह्यातील १८ ते २५ वर्षे वयोगटातील २० वुडबॉल खेळाडूंच्या गटावर हा अभ्यास करण्यात आला. सहभागी खेळाडू यादृच्छिकपणे दोन गटांमध्ये विभागले गेले; प्रायोगिक गट आणि नियंत्रित गट. प्रायोगिक गटास सार्वजनिक सुट्ट्या वगळून ०६ आठवडे योग प्रशिक्षण कार्यक्रमात देण्यात आला, ज्यामध्ये प्रतिदिनी ६० मिनिटे योगाचा सराव करण्यात आला. योग कार्यक्रमात विविध योगासने, श्वास घेण्याची तंत्रे आणि ध्यान यांचा समावेश होता. नियंत्रित गटाने कोणत्याही योग कार्यक्रमात सहभाग घेतला नाही. ०६ आठवड्यांच्या योग प्रशिक्षणापूर्वी आणि नंतर जागेवरून उंच उडी चाचणी वापरून सहभागी खेळाडूंची शक्ती मोजली गेली. टी-टेस्ट वापरून परिणामांचे विश्लेषण केले गेले.

निकाल

सारणी क्र.१ प्रयोगात्मक गटाच्या शक्ती या घटकाची संख्यात्मक विश्लेषणाची सारणी

प्रयोगात्मक गट			
पूर्व चाचणी	14.59	1.44	4.25*
उत्तर चाचणी	17.05	1.12	

significant at 0.05 levels

सारणी क्र.१ नुसार प्रयोगात्मक गटाच्या शक्ती या घटकाची पूर्व चाचणीचा मध्यांक १४.५९ तर उत्तर चाचणीचा मध्यांक १७.०५ आहे. प्रमाण विचलन अनुक्रमे १.४४ व १.१२ आहे. मध्यामानातील फरकाचे t मूल्य ४.२५ इतके आले म्हणजेच ०.०५ पातळीवर सार्थ भेद दिसून येतो यावरून प्रयोगात्मक गटाच्या शक्ती या घटकावर प्रभाव दिसून येतो.

सारणी क्र.२ नियंत्रित गटाच्या शक्ती या घटकावर संख्यात्मक विश्लेषणाची सारणी

नियंत्रित गट			“
पूर्व चाचणी	14.23	1.24	0.31*
उत्तर चाचणी	14.41	1.29	

significant at 0.05 levels

सारणी क्र.१ नुसार नियंत्रित गटाच्या शक्ती या घटकाची पूर्व चाचणीचा मध्यांक १४.२३ तर उत्तर चाचणीचा मध्यांक १४.४१ आहे. प्रमाण विचलन अनुक्रमे १.२४ व १.२९ आहे. मध्यामानातील फरकाचे t मूल्य ०.३१ इतके आले म्हणजेच ०.०५ पातळीवर सार्थ भेद दिसून येत नाही यावरून नियंत्रित गटाच्या शक्ती या घटकावर प्रभाव दिसून आला नाही.

सारांश

योगामुळे प्राप्त होणाऱ्या शक्ती, संतुलन आणि मानसिक एकाग्रता यांच्यामुळे प्रायोगिक गटात शक्ती या घटकात सुधारणा दिसून येते. आसन, प्राणायाम, ध्यान खेळाडूंची शक्ती वाढवण्यास कारणीभूत ठरू शकते, लहान नमुना आकार हि या अभ्यासाची मर्यादा आहे.

निष्कर्ष

नियंत्रित गटाच्या प्रशिक्षणापूर्वी व उत्तर चाचणीतील सांख्यिकीयदृष्ट्या सकारात्मक प्रभाव दिसून आला नाही. प्रयोगात्मक गटाच्या प्रशिक्षणापूर्वी व उत्तर चाचणीतील सकारात्मक प्रभाव दिसून आला. या अभ्यासाचे निष्कर्ष सूचित करतात की वुडबॉल खेळाडूंची शक्ती सुधारण्यासाठी योग हा एक प्रभावी मार्ग असू शकतो.

संदर्भ सुची

1. Jahra, F. M., Elsharnouby, N. M., Ibrahim, M. T. (2015). The effect of yoga training program on flexibility and balance of junior male and female athletes. Journal of Physical Education and Sport, 15(4), 677-682.
2. Sinha, B., Sinha, ., Deshpande, S., Bhat, . (2018). Effect of yoga training on reaction time, respiratory endurance and muscle strength in professional athletes. International Journal of Yoga, 11(3), 208-214.
3. डॉ. सोपान कांगणे, डॉ. शरद आहेर, डॉ. श्रीकांत महाडिक, शारीरिक शिक्षण प्रकाशक, निराली प्रकाशन, अभ्युदय प्रगती, १३१२, शिवाजीनगर पुणे (जानेवारी २०१४) पृ क्र. ९.२८
4. श्री. संगमदेव स्वामीजी, योगसाधना भाग १, सिद्धगिरी गुरुकुल फौंडेशन, कोल्हापूर (२००५)
5. K.S.Gopal :- Effect of yogasana and pranayama on blood pressure pulse rate and some respiratory function. Indian journal of physiology pharmacy, 17(1973), pp272-276
6. Rules woodball and beach woodball : international woodball federation
7. En.m.wikipedia.org
8. Woodball world magazine



Indian Higher Education System and Problem in Higher Education

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Abstract:

Higher Education plays a crucial role in the social, economic, and industrial development of a country. India boasts one of the world's largest education systems, surpassed only by the United States and China. The tertiary level is governed by the University Grants Commission, which enforces rigorous standards. Higher education has always held a prominent position in Indian history, with Nalanda, Taxila, and Vikramsila universities serving as renowned seats of learning that attracted students from around the globe. However, the situation in modern India is different. The main issues plaguing higher education today include a lack of quality education, low enrolment rates, inadequate infrastructure, insufficient funding, unequal access, subpar research, and low-quality teaching and learning. This paper will delve into these current problems and explore potential solutions for higher education.

Key Words: Problem of Higher education, Higher Education

Introduction:

In today's globalised world every country working hard for the development. Development of the country in terms of social, political, economical etc, which can't be possible without higher education. Higher Education is a process which affect on the overall development of the people. It is a humanizing process. Higher education is for transformation of the society and nation from undeveloped to developed stage, to be able to think by one-self, to be able to relate to others meaningfully and to understand the world and society clearly. Nations development always depends on natural resources (20%), infrastructure (16%) and on human resource and social factor (64%).

India's higher education system stands third in size in the world after the US and China, with nearly 26 million students in over 45,000 institutions in the country in 2012. In the last decade the country has witnessed a

particularly high growth rate in student enrolment at a CAGR of 10.8% and institutions at 9%. The University Grants Commission (UGC) which enforces its standards is the main governing body at the tertiary level and advises the government, coordinating between the centre and the state. Accreditation for higher learning is monitored by twelve autonomous bodies established by the UGC. During the Eleventh Plan period (2007–2012), India achieved a Gross Enrolment Ratio (GER) of 17.9%, up from 12.3% at the beginning of the Plan period. At present in 2016, there are 759 government-recognized Universities in India. Out of them 47 are central universities, 123 are deemed universities, 350 are state universities and 239 are private university. Most of these universities in India have affiliating colleges where undergraduate courses are being taught. Central and State government has taking efforts for the development of higher education in the country.

Objective : To study Indian higher education system and Problem in higher education

Methodology:

Methodology of the Study: In this study basically secondary source of data collection has been utilized. The information on higher education in India, its problem and other important information are compiled from UGC, MHRD's website as well as through articles and reports of the various studies.

Problem Higher education in India: Since we have got independence we are facing challenges to establish a great and strong education system. Many governments came and gone, but situation has not changed. Every government has tried establish new education policies in the system but that efforts was sufficient for our country. Still we are facing lot of problems and challenges in our Higher Education System.

The Indian higher education system encounters multiple obstacles that impede its general development

and efficiency. Here are a few significant issues:

Accessibility and Fairness: A primary concern is the absence of fair access to higher education. Many students, particularly those from marginalized communities and rural areas, face obstacles such as financial constraints, limited infrastructure, and inadequate educational opportunities that prevent them from pursuing higher education.

Education Quality: Though India has a vast number of higher education institutions, the quality of education provided is often irregular. Outdated curriculum, insufficient infrastructure, a shortage of qualified faculty, and an emphasis on memorization instead of critical thinking impede the development of well-rounded and skilled graduates.

Skills Gap: Despite a large number of graduates, there is a significant difference between the skills possessed by students and the skills required by the job market. Numerous graduates are not adequately prepared for employment, resulting in high rates of unemployment and underemployment.

Research and Innovation: The Indian higher education system has historically focused more on teaching than on research and innovation. There is a deficiency of investment in research infrastructure, limited collaboration between academia and industry, and inadequate incentives for faculty and students to engage in research activities. This hampers the country's ability to produce groundbreaking research and technological advancements.

Gender Inequality: Gender inequality is a persistent issue in Indian higher education. Women face social and cultural barriers that restrict their access to education, particularly in specific fields such as science and technology. Gender-sensitive policies and initiatives are necessary to promote gender equality in higher education.

Funding and Governance: Numerous higher education institutions in India suffer from insufficient funding, which limits their capacity to improve infrastructure, enhance research facilities, and attract talented faculty. Additionally, bureaucratic hurdles and a lack of autonomy in decision-making processes hinder effective governance and management of institutions.

Technology Adoption: Although technology has the potential to transform education, its integration into the higher education system in India has been limited. Inadequate access to digital infrastructure, insufficient training for teachers, and insufficient awareness about the benefits of technology hinder the effective use of educational technology in classrooms. Addressing these challenges necessitates comprehensive reforms, including increased investment in education, curriculum redesign to

focus on practical skills and critical thinking, enhanced research infrastructure, promotion of inclusive policies, and stronger industry-academia collaboration.

The supply-demand gap: India has a low rate of enrolment in higher education, at only 18%, compared with 26% in China and 36% in Brazil. There is enormous unmet demand for higher education. By 2020, the Indian government aims to achieve 30% gross enrolment, which will mean providing 40 million university places, an increase of 14 million in six years which looks impossible and may have to take extra efforts to work hard to achieve the

The low quality of teaching and learning: Quality of student can be produced after providing them quality of teaching and learning. But our education system was not able to provide them quality of teaching and Learning Facility.

Poor government funding – government have not providing adequate funding to all higher education institute.. In such a scenario employees are more focused on sustaining themselves rather than deliver quality education. This will affect the overall quality of the higher education.

Inadequate faculty – The student teacher ratio is always an important remarkable question in our higher education system. It is lower in urban as well as rural area. Student enrolment ratio has increasing every year but teaching staff not increased that much.

Unqualified or untrained faculty - for teaching faculty at UG and PG level our education system does not have any proper training. NET/SET or Ph.D are the minimum requirement for the assistant professor. In private Agriculture, engineer college there is lack of trained and quality teacher, which affecting the overall quality of the education.

Inappropriate or over load in curriculum – Our syllabus does not change according to the time of need of market or demand of the globe. The curriculum of most higher education courses is very infrequently updated even as the world sees a continuously changing scenario in industry manpower requirements. This has caused a crass divide between the industry expectations and the college pass outs that are poorly equipped with the right technical, business or social skills to be employed.

Lack of financial resources – financial resource always play important role in the development of any system. It is one of the reasons behind our weak performance in the higher education in India. Most under-represented communities face a lack of financial strength to pursue any reasonably high quality of education. While successive governments have declared financial aid for many economically weaker sections for higher education, many communities are denied the advantage

due to complex processes.

Ineffective Monitoring – Higher education requires constant monitoring from the regulatory bodies through periodic inspections and performance measurement methodologies. There are no appropriate parameters to measure performance indexes once faculty are employed and this has given rise to severe inconsistency in the delivery of quality education.

Social differences between classes – This constraint has been historically a damaging element in healthy social relationships. While the upper classes look down upon the lower classes, the lower classes are de-motivated from continuing their higher education. This divide is more rampant in the northern states of India by comparison with the south.

Poor Infrastructure: poor infrastructure is one of the major characteristics of Higher education in rural India. In urban areas situation about infrastructure has also not satisfactory. Not only private institute has problem of infrastructure but government institute also have the same problem. In state like Bihar, in government medical college student have spending their money for the maintenance of classroom. Lack of Laboratory, smart classroom, library etc are the major problem in infrastructure.

Constraints on research capacity and innovation: With a very low level of PhD enrolment as compared to other developed country, India does not have enough high quality researchers; there are few opportunities for interdisciplinary and multidisciplinary working, lack of early stage research experience; a weak ecosystem for innovation, and low levels of industry engagement.

Measures to Improve Access to Quality Education

Improving access to quality education in India requires a multi-faceted approach that addresses various barriers and challenges. Here are some measures that can be taken to enhance access to quality education:

Universal Primary Education: Ensuring universal access to primary education is essential as it forms the foundation for further education. Implementing policies and programs that prioritize universal enrollment, particularly for marginalized communities, will help increase access to quality education.

Scholarships and Financial Aid: Introducing comprehensive scholarship and financial aid programs will support economically disadvantaged students in accessing higher education. These programs should target students from marginalized backgrounds, providing them with financial assistance to cover tuition fees, books, and other educational expenses.

Infrastructure Development: Investing in the development of educational infrastructure, particularly in rural and remote areas, is crucial for improving access to

quality education. This includes building schools, colleges, libraries, laboratories, and digital learning centers to ensure that students have the necessary resources and facilities for effective learning.

Digital Education Initiatives: Leveraging technology to deliver education can help bridge geographical gaps and reach underserved areas. Promoting the use of digital platforms, online courses, and e-learning resources can provide access to quality education, particularly in remote and rural regions.

Teacher Training and Capacity Building: Enhancing the skills and competencies of teachers through comprehensive training programs will improve the quality of education. Emphasis should be placed on promoting innovative teaching methodologies, critical thinking, and student-centered approaches to ensure effective classroom instruction.

Curriculum Reforms: Regularly updating and aligning the curriculum with changing industry needs and global trends is essential. Introducing practical skills, vocational training, and entrepreneurship education within the curriculum will enhance students' employability and make education more relevant to real-world challenges.

Focus on Inclusive Education: Addressing social and cultural barriers that prevent certain groups, such as girls, children with disabilities, and marginalized communities, from accessing education is crucial. Implementing inclusive policies, providing special facilities and support, and promoting awareness and sensitization programs will ensure equitable access to education for all.

Public-Private Partnerships: Encouraging collaboration between the government, private sector, and non-profit organizations can help expand access to quality education. Public-private partnerships can bring together resources, expertise, and innovation to create a more comprehensive and inclusive education system.

Monitoring and Evaluation: Establishing robust monitoring and evaluation mechanisms to assess the effectiveness of education policies and programs is crucial. Regular assessments of learning outcomes, school infrastructure, teacher performance, and student progress will help identify areas of improvement and ensure accountability in the education system. **Community Engagement:** Involving parents, local communities, and stakeholders in the education process is vital. Creating platforms for community participation, parental involvement, and awareness campaigns will foster a supportive environment for education and ensure its sustained progress. By implementing these measures, India can make significant strides in improving access to quality education and reducing educational disparities across the country.

Conclusion:

The Indian system of higher education undoubtedly faces challenges, but it also possesses the potential to become the world's premier education system in the years ahead. India is presently transitioning into a knowledge-based, service-oriented economy, and human capital plays a vital role in the nation's social and economic development. India is blessed with a youthful population, with more than half of its citizens aged between 18 and 30. It is projected that by 2025, India will account for 25% of the world's workforce. To unlock the full potential of this demographic dividend, India must establish an education system that produces an "employable" workforce capable of providing quality, skilled, and industry-ready personnel while also maintaining a focus on world-class research and innovation. To achieve this, we must transform our traditional higher education system into one that is geared toward job, research, skill, and knowledge-oriented education. If we successfully accomplish this transformation, our country will achieve the distinction of being the world's foremost provider of quality education.

Reference:

- Singh. J. D, Higher Education in India – Issues, Challenges and Suggestions
- Annual Report:2014-15: Department of School Education & Literacy Department of Higher Education Ministry of Human Resource Development Government of India
- Gupta. D, Gupta. N, Higher Education in India: Structure, Statistics and Challenges
- Higher Education in India: Twelfth Five Year Plan (2012–2017) and beyond FICCI Higher Education Summit 2012
- Higher Education In India: Issues, Concerns And New Directions (2003),Ugc
- Shaguri. O. R, Higher Education In India: Access, Equity, Quality : Ean World Congress Scholar 2013
- <http://www.gvctesangaria.org/websiteimg/publications/jdarticle.pdf>
- <http://www.ugc.ac.in/oldpdf/alluniversity.pdf>
- <http://www.ugc.ac.in/page/Genesis.aspx>
- https://en.wikipedia.org/wiki/Higher_education_in_India

