IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

TO STUDY THE EFFECT OF VEGETARIAN AND NON-VEGETARIAN DIETARY PATTERN ON EXERCISING POPULATION

[1]Ms. Naidu Sharmila and [2]Dr. (Mrs.) Battalwar Rekha

[1] Student of M.Sc (Clinical Nutrition and Dietetics), Dr. Bhanuben Mehendra Nanavati College Of Home Science, 338, S.N.D.T Women's University, 338, Rafi Ahmed Kidwai Road, Matunga, Mumbai-400019.

[2] Associate Professor, Department of Food, Nutrition and Dietetics , Sir Vithaldas Thackersey College of Home Science (Autonomous), S.N.D.T. Women's University, Juhu Tara Road, Mumbai – 400049, India.

Abstract: Aim: To study the effect of vegetarian and non-vegetarian dietary pattern on exercising population.

Objectives: 1) To assess the anthropometry measurements. 2) To evaluate the dietary pattern by 24hr home recall. 3) To assess the behavioural and lifestyle changes. 4) To evaluate various Performance Evaluation Test. 5) To compare the vegetarian and the non-vegetarian groups through Nutritional Assessment Tool and Performance Evaluation Test.

Methods: Purposive convenience sampling method was used for the female's participants who were exercising in gyms in the age group of 18-35 year. Total sample size was 100, in which 50 vegetarian and 50 non-vegetarian. Interview cum questionnaire method was used to collect data from the participants. Performance evaluation test was conducted to evaluate tests like Step test, balance test, body composition, sit and reach, core muscle , abdominal curl, and general strength test. Analyses were performed using SPSS software version 20. $P<0.05$ was considered to be statistically significant.

Results and discussion: Non-vegetarian group (NON-VEG) had higher percentage of medical problems than Vegetarian group (VEG). The mean values for weight was lower in VEG (63.88 + 12.430) than NON-VEG group(66.88 + 12.346)kg and mean values for Body fat% was higher in VEG (57.94 + 173.53) than NON-VEG (33.96+ 6.278)%. Performance evaluation test for core muscle i.e. plank test mean values were lower for VEG (49.90 + 35.642) compared to NON-VEG group (55.18 + 66.454)secs. Balance test ($p=0.018$) and squats test ($p=0.050$) scores were higher in NON-VEG group. A negative association was observed between BMI and RHR ($p= 0.004$), BMI and 1 Min step test ($p=0.023$). There was positive association between BMI and weight ($p= 0.000$), visceral fat ($p=0.000$) and BMR ($p =0.000$). 24 hrs dietary recall showed no significant difference in energy ($p=0.131$), carbohydrates ($p=0.342$) and fats ($p=0.637$) between the groups. The protein intake ($p=0.002$) was higher in NON-VEG group.

Conclusion: In the present study vegetarian and non-vegetarian groups were compared on the basis of nutritional assessment and performance evaluation test's. Performance evaluation scores for Balance test, plank test, abdominal curl test and squats were better in exercising non- vegetarian group and the protein intake was higher, whereas in vegetarian exercising population flexibility was better and they had lower chance of medical problems. To conclude a well balanced diet with good amount and quality of protein plays an important role in maintaining high level of performance.

Keywords: Vegetarian diets, Non- vegetarian diets, Performance evaluation test, 24hr home recall, BMI.

I. INTRODUCTION

Vegetarian dietary practices have been associated with many health benefits, including lower death rates from ischemic heart disease, diabetes, and certain forms of cancer and lower risks of dyslipidemia, hypertension, and obesity. Most vegetarians have higher intakes of fruit and vegetables, dietary fiber, antioxidant nutrients, photochemical, and folic acid than do non-vegetarians, and lower intakes of saturated fat and cholesterol, which have been related to lower risk of chronic disease [(1)].Vegetarians have higher antioxidant status for vitamin C (ascorbic acid), vitamin E (tocopherol), and ß-carotene than omnivores, which helps to reduce exercise-induced oxidative stress and assisting training and enhancing recovery[(2)].A recent study testing the physical performance of endurance athletes, observed a 13% greater maximal oxygen consumption ($VO_{2\ max}$) in female vegetarians as compared to non-vegetarian [(3)]. Dairy products are rich in amino acids, proteins, lipids, minerals and vitamins. These beneficial properties are based on the lactose, casein and whey protein commonly in a 3:1.ratio as well as calcium. Also calcium, sodium or potassium helps in fluid

recovery after exercising .Cow's milk had a positive effect on muscle soreness and tiredness at 72 h post resistance exercise [4].Vegetarians typically have a lower body mass index (BMI) and an improved lipid profile. Also Researchers indicated that vegetarian endurance athletes' cardiorespiratory fitness was greater than that for their omnivorous [5]. Significant differences were determined as body weight for vegetarian (VER) and vegan endurance runners (VGR) was less than for omnivorous endurance runners (OR[6].

High protein content in meat diet helps in promoting athletic performance which is based on how much aerobic-based versus resistance-based activity the athlete undertakes. Protein consumption, as high as 1.8-2.0 g /kg perday depending on the caloric deficit, may be advantageous in preventing lean mass losses during periods of energy restriction to promote fat loss[7]. Creatine supplementation increases creatine storage and promotes a faster regeneration of adenosine triphosphate between high intensity exercises. These improved outcomes will increase performance and promote greater training adaptations[8]. Beef supplementation had a similar positive effect on athletic performance by enhancing endurance and reducing muscle fatigue[9]. Carnosine which is found highlt in fish,meat and chicken and it is synthesized in skeletal muscle from the amino acids l-histidine and beta-alanine. Which has the potential to improve the physical performance during high-intensity exercise [10]. No significant differences between vegetarian-based diets and omnivorous mixed diets was found. Consuming a predominately vegetarian-based diet did not improve nor hinder performance in athletes [11]. Most endurance athletes are interested in diets that positively affect exercise capacity and health, reduce body fat and promote the development of lean muscle mass [13]. Today the trend is developing in the opposite direction, from partial exclusion (lacto−/ovo−/lacto-ovo-vegetarians) to the total elimination (veganism) of animal products from the diet. [14]

II. RESEARCH METHODOLOGY

The research proposal was approved by the institutional ethical committee of Dr BMN College of Home Science. Purposive convenience sampling method was used. Total sample size was 100 which included only females exercising in gyms in the age group of 18-35 years. Out of which 50 were vegetarian's (VEG, n= 50) and 50 were non-vegetarian's (NON-VEG, n= 50). These participants were taken from the fitness centres located near Parel, Dadar and Matunga, Mumbai. Participants exercising for 3 or more than 3 months were included and less than 3 months were excluded. Participants age less than 18 years and more than 35 years with severe health issues were excluded from the study.

Interview cum questionnaire method was used to collect data from the participants, based on the parameters like general information, medical history, lifestyle and behavioural pattern , performance evaluation test, exercise regime, dietary pattern and 24 hr dietary recall. Participants general information includes all basic information like name, age, sex, occupation, dietary preference (vegetarian / non- vegetarian / ovo-vegetarian / vegan).The details of lifestyle and behavioural pattern such as smoking, drinking, tobacco consumption and their sleeping pattern were collected. Performance evaluation test were used to assess the strength and endurance of the participants which included various test's like Step test, balance test, body composition, sit and reach test, Plank and squats. Exercise regime included exercise frequency, schedule, duration and type. Dietary pattern were based on specific diet followed, supplements, brand, amounts, meal consumption, pre and post meals, water consumption per day and during exercise. Three days 24 Hours dietary recall was taken (2 week days and 1 weekend). Average of energy, protein, fats and CHO was calculated and compared with the standard reference values.

III. STATISTICAL TOOLS

Analyses were performed using SPSS software version 20 . Data are presented as Mean ± SD, median (minimum-maximum), percentage. Independent Sample t test was used to analyse the difference in sleeping pattern, various performance evaluation test, pre post meals and also for 24 Hrs home recall. The frequency distributions were tabulated for various parameters according to VEG and NON-VEG and were compared using cross tabulations and chi-square test. Pearson's chi square (X^2) correlation was used to find correlation between vegetarian and non-vegetarian group along with BMI category and performance evaluation test. $p<0.05$ was considered to be statistically significant.

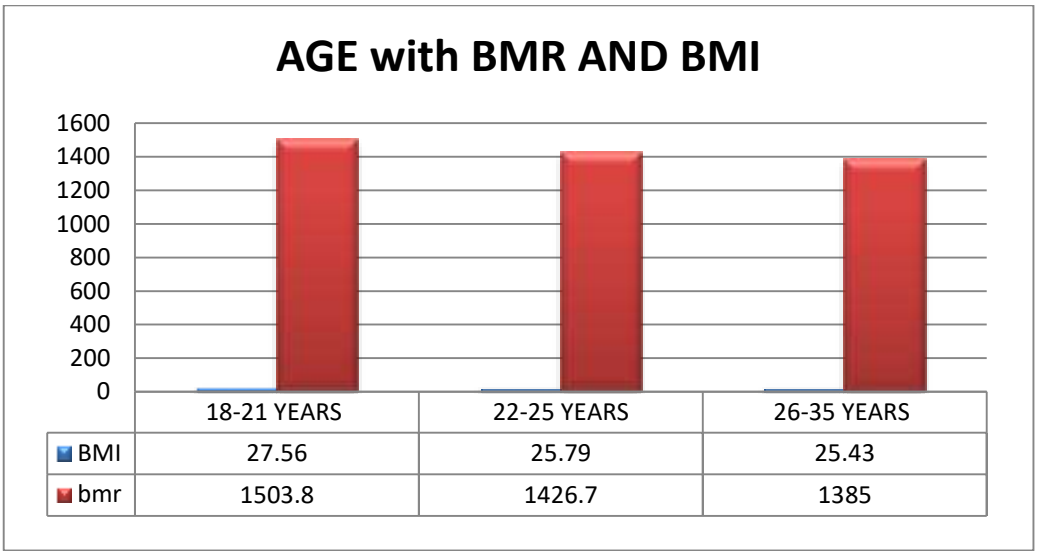
IV. RESULTS AND DISCUSSION

Effect of VEG and NON- VEG dietary pattern of 100 young females with mean age VEG (26.08 + 5.14) and NON- VEG (24.16 + 4.43) years is presented in the current study. The mean age values for VEG group (**p=0.048**) was higher.

a. Correlation of Age with BMR and BMI:

As seen in fig 1, there was decrease in BMR and BMI with increasing age. Positive association was seen between BMR with age (**p= 0.003**) and BMI with age (**p= 0.001**) High BMR seen in 18- 21 years of age (27.56) and low BMR in 26-35 years of age (25.43).

Fig 1: Correlation of Age with BMR and BMI



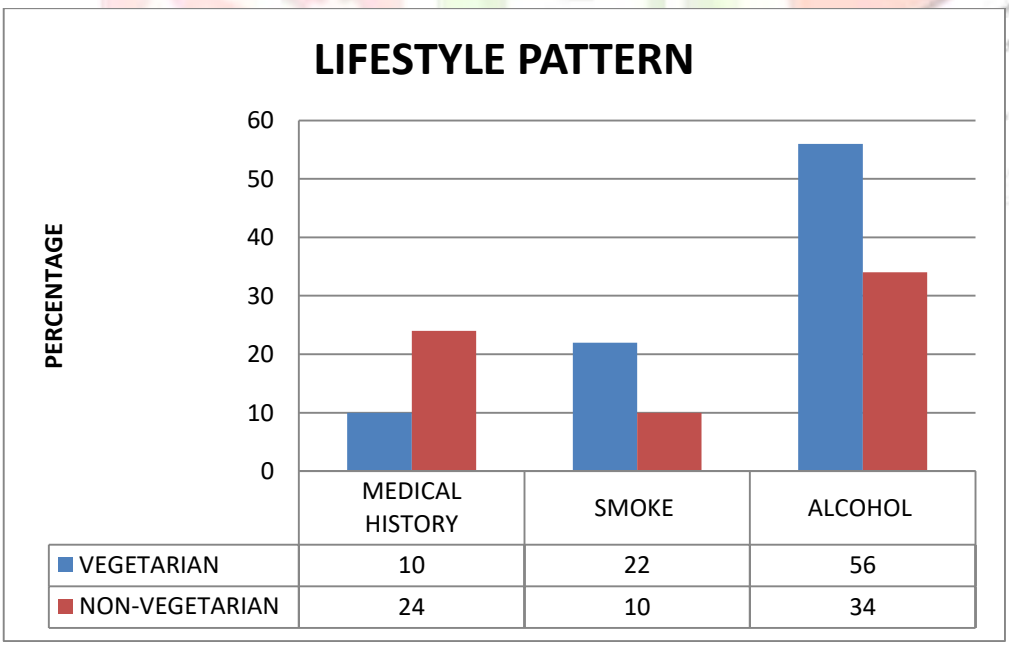
b. Lifestyle pattern:

As seen in the figure 2, VEG group had lower percentage of medical problems than NON-VEG group.

Out of 100, 18.0% participants were having medical problems. Polycystic ovary syndrome (PCOD), Thyroid and Diabetes Mellitus (DM) were maximum. Smoking was higher in VEG (22.0%) than NON-VEG group (10.0%). Higher alcohol consumption was observed in VEG (56.0%) than NON-VEG group (34.0%).

In the study by Nieman DC, vegetarian dietary practices have been associated with many health benefits, including lower death rates from ischemic heart disease, diabetes, and certain forms of cancer and lower risks of dyslipidemia, hypertension, and obesity. Most vegetarians had higher intakes of fruit and vegetables, dietary fiber, antioxidant nutrients, photochemical, and folic acid than do non-vegetarians, and lower intakes of saturated fat and cholesterol, which have been related to lower risk of chronic disease .Vegetarians diets had higher antioxidant status for vitamin C (ascorbic acid), vitamin E (tocopherol), and ß-carotene than omnivores, which helps to reduce exercise-induced oxidative stress[(1).]

FIG 2: Lifestyle pattern



Performance Evaluation Test:

Table no1 gives the mean value for various performance evaluation test's conducted in fitness centres. As seen in the table there were no significant difference in the mean values for Resting heart rate VEG (82.36 ± 12.240) and NON-VEG (83.50 ± 10.043)bpm, 1 min step test VEG (95.84± 16.417) and NON-VEG (93.82± 12.435)bpm, flexibility test VEG (23.86± 6.141)NON-VEG (24.26± 6.308)cms, abdominal curl test VEG (11.98± 4.465) NON-VEG (12.08±4.784). No significant difference were seen in body composition variables for height VEG (159.32± 9.633) NON-VEG (159.04 ± 6.821)cms, weight VEG (63.88 ± 12.430) NON-VEG

(66.88 + 12.346)kg, skeletal muscle mass VEG (23.74 ± 7.605) NON-VEG (22.42 ± 1.808)kg, visceral fat area VEG (8.70 + 3.144) NON-VEG (8.86± 3.003) groups.
The mean values for weight was lower in VEG (63.88 ± 12.430) than NON-VEG (66.88 + 12.346)kg and mean values for Body fat% was higher in VEG (57.94 + 173.53) than NON-VEG (33.96± 6.278)%. Performance evaluation test for core muscle i.e plank mean values was lower for VEG (49.90 ± 35.642) compared to NON-VEG (55.18 ± 66.454)secs.

There was significant increase in the Balance test (p=**0.018**) and squats test (p=**0.050**) in NON-VEG group.

In the study byRizzo NS significant differences were determined as body weight for vegetarian (VER) and vegan endurance runners (VGR) was less than for omnivorous endurance runners (OR). Mean body mass index was higher in non-vegetarians and lower in vegetarians [(15)]. In the study by James LJ, endurance time was longer and recovery was fast in non-vegetarian group, which could be a result of nutrient intake and high haemoglobin concentration[(6)]. In the study by Khanna, higher the concentrations of haemoglobin, greater were the capacity of the system to carry oxygen to cells and tissues. If higher amount of oxygen is available one can sustain exercise for longer time [(16).]

Table 1: Performance Evaluation Test

EXERCISE TEST	**MEAN ± SD**		**p value Sig.(2-tailed)**	**t value**
	VEGETARIAN (n=50	**NON-VEGETARIAN (n=50**		
RESTING HEART RATE (RHR) (bpm)	82.36 ± 12.240	83.50 ± 10.043	0.612	-.509
1 MIN STEP TEST (bpm)	95.84± 16.417	93.82± 12.435	0.490	0.694
BALANCE (sec)	6.38 ± 3.096	8.40 ± 5.067	**0.018 ****	-2.405
FLEXIBILITY (cm)	23.86± 6.141	24.26± 6.308	0.749	-.321
PLANK (sec)	49.90 ± 35.642	55.18 ± 66.454	0.622	-.495
ABDOMINAL CURL	11.98± 4.465	12.08± 4.784	0.914	-.108
SQUATS	25.22 ± 10.828	29.92 ± 12.771	**0.050****	-1.985
BODY COMPOSITION				
HT (cm)	159.32± 9.633	159.04 ± 6.821	0.867	0.168
WT (kg)	63.88 ± 12.430	66.88 ± 12.346	0.229	-1.211
BODY FAT % (%)	57.94 + 173.569	33.96± 6.278	0.336	0.966
SKELETAL MUSCLE MASS (kg)	23.74 ± 7.605	22.42 ± 1.808	0.235	1.194
VISERAL FAT	8.70 + 3.144	8.86± 3.003	0.795	-.260
BMI (kg/m^2)	25.58 ± 4.612	26.58 ± 4.853	0.293	-1.056
BMR (kcal / day)	1426.46 ± 139.363	1437.14 ± 139.582	0.703	-.383

c. Correlation of BMI with performance evaluation test:

As seen in Table no2, correlation was studied for BMI with performance test. With increasing BMI there was decrease in Resting heart rate (RHR) and 1 min step test for both groups (VEG, NON-VEG). Lower the BMI good balance was seen in NON-VEG groups. Higher the BMI good flexibility was seen in VEG group. There was no significant difference when BMI was correlated with flexibility, plank, abdominal curl test, squats. A negative association was observed between BMI and RHR (**p= 0.004**), BMI and 1 Min step test (**p=0.023**). With increasing BMI there was decrease in heart rates in both groups.

Table 2 Correlation of BMI with performance evaluation test

BMI (Asian Guidelines)	DIET PREFERENCE	RHR (BPM)	1 MIN STEP TEST (BPM)	BALANCE TEST (SEC)	FLEXIBILITY TEST (CMS)	PLANK (SEC)	ABDOM-INAL CURL	SQUATS
<18.5 UNDER WEIGHT	**VEG**	111	124	4	29	50	10	28
	NONVEG	110	126	15	18	10	10	30
18.5- 24.9 NORMAL	**VEG**	82	95.13	5	24.4	57	13	25
	NONVEG	83.9	95.1	11	28.27	55	10	31
25-29.9 OVER-WEIGHT	**VEG**	83	97	5	24.33	56.6	9.5	20
	NONVEG	84	94.7	7	24.4	52.1	14	28
>25 OBESE	**VEG**	81.3	94.8	7	23.2	44.5	12	26
	NONVEG	82.1	92.10	7.4	23	57.3	12	30
p value		**0.004***	**0.023***	0.630	0.246	0.914	0.936	0.847

d. Correlation of BMI with Body composition:

As seen in Table no3, correlation was studied for BMI with Body composition. There was increase in weight with increasing BMI for both groups (VEG, NON-VEG). As compared to NON-VEG higher skeletal mass was seen in VEG Group. Visceral fat area and BMR was higher with increasing BMI for both groups. Positive association was seen between increasing BMI with weight (**p= 0.000**), visceral fat (**p=0.000**), BMR **(p =0.000**) for both the groups.

Table 3: Correlation of BMI with Body composition

BMI	DIET PREFERENCE	HEIGHT (CMS)	WEIGHT (KGS)	SKELETAL MUSCLE MASS (KG)	VISERAL FAT AREA	BMR
<18.5 (UNDERWEIGHT)	**VEG**	164	49	23	8	1338
	NONVEG	162	46	22	9	1255
18.5-24.9 (NORMAL)	**VEG**	160	53.2	22.9	6.07	1327
	NONVEG	159.2	55.1	22.7	6	1318
25-29.9 (OVERWEIGHT)	**VEG**	162.6	63.3	22.83	9.83	1427
	NONVEG	159.4	60.1	21.4	7.14	1378.2
>25 (OBESE)	**VEG**	157.7	70	24.3	9.89	1482.3
	NONVEG	158.7	73	22.5	10.26	1498.5
p value		0.599	**0.000***	0.872	**0.000***	**0.000***

e. Pre and post meal consumption:

Table no 4 shows the percentage of the pre and post meal consumption of the exercising participants. As seen in this table pre and post meal consumptions were higher in VEG group than NON-VEG. Premeal percentage for VEG was (68.0%) out of which the maximum food consumption was for fruits (30.0%), nuts(18.0%) and milk(12.0%) and the minimum consumption was for coffee(6.0%) and green tea(2.0%) .Premeal percentage for NONVEG was 56.0% in which maximum was for fruits(26.0%) and nuts(10.0%) , minimum for milk(6.0%), chicken(6.0%) and least for coffee and green tea(4.0%) . There was no significant difference seen in premeal consumption in both groups.

Postmeal percentage for VEG (64.0%) out of which the maximum food consumption was for fruits (30.0%), protein supplements (20.0%) and minimum consumption was for paneer/curd (10.0%) and oats(4.0%) . Post meal percentage for NONVEG was (28.0%) in which maximum was for fruits (10.0%) and protein supplements (10.0%), minimum for egg whites (4.0%) and nuts (2.0%). Positive association was observed in post meal consumption for fruits (**p=0.023**) and paneer/curd (**p=0.056**) in VEG groups.

Table 4 : Pre and post meal consumption

Pre and Post meal	**% within DIET Preference**		**Pearson Chi square (X^2)**	**p Value Exact sig. (2-sided)**
	VEGETARIAN (n=50	**NON-VEGETARIAN (n=50**		
PRE MEAL FOODS				
NUTS	18.0%	10.0%	1.329	0.388
COFFEE	6.0%	4.0%	0.211	1.000
MILK	12.0%	6.0%	1.099	0.487
GREEN TEA	2.0%	4.0%	0.344	1.000
FRUITS	30.0%	26.0%	0.198	0.824
CHICKEN	0.0%	6.0%	3.093	0.242
Total	68.0%	56.0%		
POST MEAL FOODS				
Powdered Oats	4.0%	2.0%	0.344	1.000
Nuts	0.0%	2.0%	1.010	1.000
Protein supplement	20.0%	10.0%	1.961	0.262
Fruits	30.0%	10.0%	6.250	**0.023****
Egg whites	0.0%	4.0%	2.041	0.495
Panneer/curd	10.0%	0.0%	5.263	**0.056****
Total	64.0%	28.0%		

f. 24 hrs dietary home recall:

As seen in the **Table no 5**, there was no significant difference seen in energy (p=0.131), carbohydrates (p=0.342) and fats (p=0.637) intake of (VEG and NON-VEG) groups. Significant increase in proteins intake **(p=0.002)** was seen in NON-VEG group.

In the study by Wirnitzer, high protein content of non-vegetarian diet helped in promoting athletic performance which was based on how much aerobic-based versus resistance-based activity the athlete undertakes. Protein consumption as high as 1.8-2.0 g /kg/day may be advantageous in preventing lean mass losses during periods of energy restriction to promote fat loss [7].

Table 5 : 24 hrs dietary home recall

24 HR HOME RECALL	MEAN ± SD		Sig.(2-tailed)	t value
	VEGETARIAN (n=50	NON-VEGETARIAN (n=50		
ENERGY (kcal)	1387.76± 409.863	1507.94± 377.781	0.131	-1.525
CARBOHYDRTAES (gms)	174.78± 51.267	185.98 ± 65.181	0.342	-.955
PROTEINS (gms)	42.90 ± 17.906	56.16 ± 23.819	**0.002 ****	-3.146
FATS (gms)	52.18 ± 21.054	53.92 ± 15.200	0.637	-.474

IV. CONCLUSION

In the present study vegetarian and non-vegetarian groups were compared on the basis of nutritional assessment and performance evaluation test. Performance evaluation scores for Balance test, plank test, abdominal curl test and squats were better in exercising non- vegetarian group and the protein intake was higher, whereas in vegetarian exercising population flexibility was better and they had lower chance of medical problems. To conclude a well balanced diet with good amount and quality of protein plays an important role in maintaining high level of performance.

REFERENCES

1) Nieman DC , (1999). Physical fitness and vegetarian diets: is there a relation? *American journal of clinical nutrition*, 70(3 Suppl):570S-575S. doi: 10.1093/ajcn/70.3.570s.
2) Rogerson D. (2017). Vegan diets: practical advice for athletes and exercisers. *Journal of the International Society of Sports Nutrition*, *14*, 36. doi:10.1186/s12970-017-0192-9
3) Josefine Nebl, Sven Haufe, Julian Eigendorf, Paulina Wasserfurth, Uwe Tegtbur & Andreas Hahn (2019). Study on Exercise capacity of vegan, lacto-ovo-vegetarian and omnivorous recreational runners. *Journal of the International Society of Sports Nutrition*, 16, 23. doi: 10.1186/s12970-019-0289-4.
4) James LJ, Stevenson EJ, Rumbold PLS, Hulston CJ (2019). Cow's milk as a post-exercise recovery drink: implications for performance and health. *European journal of sports science*, (1), 40-48. doi: 10.1080/17461391.2018.1534989.
5) Lynch, H. M., Wharton, C. M., & Johnston, C. S. (2016). Cardiorespiratory Fitness and Peak Torque Differences between Vegetarian and Omnivore Endurance Athletes: A Cross-Sectional Study. *Nutrients*, *8*(11), 726. doi:10.3390/nu8110726.
6) James LJ, Stevenson EJ, Rumbold PLS, Hulston CJ (2019). Cow's milk as a post-exercise recovery drink: implications for performance and health. *European journal of sports science*, (1), 40-48. doi: 10.1080/17461391.2018.1534989.
7) Wirnitzer, K., et al (2018). Health Status of Female and Male Vegetarian and Vegan Endurance Runners Compared to Omnivores. *Nutrients*, *11*(1), 29. doi:10.3390/nu11010029.
8) Phillips SM, Van Loon LJ,(2011). Dietary protein for athletes: from requirements to optimum adaptation. *Journal of sports science*, 29: 29-38. doi: 10.1080/02640414.2011.619204.
9) Cooper, R., Naclerio, F., Allgrove, J. *et al, (2012).* Creatine supplementation with specific view to exercise/sports performance: an update. *Journal of International Society of Sports Nutrition* 9, 33 doi:10.1186/1550-2783-9-33.
10) Tsung-Hsien Hsu, Chien-Chao Chiu, Yu-Chih Wang, Ter-Hsin Chen, Yi-Hsun Chen, Yen-Peng Lee, Shao-Wen Hung, Chean-Ping Wu, Hsiao-Li Chuang, (2018). Supplementation with Beef Extract Improves Exercise Performance and Reduces Post-Exercise Fatigue Independent of Gut Microbiota. *Nutrients.* ; 10(11): 1740. Published online 2018 Nov 12. doi: 10.3390/nu10111740.
11) Artioli GG, Gualano B, Smith A, Stout J, Lancha AH Jr, (2010).Role of beta-alanine supplementation on muscle carnosine and exercise performance. *Medical science of sports excercise*, 42(6):1162-73. doi: 10.1249/MSS.0b013e3181c74e38.
12) Craddock JC, Probst YC, Peoples GE. (2016). Vegetarian and omnivorous nutrition comparing physical performance. International journal of Sports Nutrition and Exerc Metabolism, 26(3):212-20. doi: 10.1123/ijsnem.2015-0231.
13) Rosenbloom C.(2014). Popular diets and athletes: premises, promises, pros, and pitfalls of diets and what athletes should know about diets and sports performance. *Nutrition Today*;49:244–8. https://doi.org/10.1097/NT. 0000000000000043.
14) Turner-McGrievy GM, Moore WJ, Barr-Anderson D(2015). The interconnectedness of diet choice and distance running: results of the research understanding the Nutrition of endurance runners (RUNNER) study. *International Journal of Sport Nutrition and Exercise Metabolism.* 2015;26(3):205–11. https://doi.org/10.1123/ijsnem.2015-0085
15) Rizzo NS, Jaceldo-Siegl K, Sabate J, Fraser GE(2013) *Academy of Nutrition andDietitics*. 113(12):1610-9. doi: 10.1016/j.jand.2013.06.349. Epub 2013 Aug 27.
16) Khanna, G.L, Lal, P.R, Kommi, K. & Chakraborty, T (2006). A Comparison of a Vegetarian and Non-Vegetarian Diet in Indian Female Athletes in Relation to Exercise Performance. *Journal of Exercise Science and Physiotherapy*, 2, 27-34.