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EFFECT OF REGULAR PRACTICE OF YOGASANAS AND PRANAYAMA ON THE UPPER RESPIRATORY TRACT INFECTION STATUS POST THEIR FIRST 10 KM RUN AMONG RECREATIONAL YOUNG WOMEN RUNNERS

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ABSTRACT

Background: Regular physical activity improves the general immunity and also certain specific types of immunities, however, severe and high intensity exercises like long distance running especially by beginners might induce certain inflammatory conditions leading to immunosuppression temporarily causing Upper Respiratory Infections to the runners. There may be possible resources like probiotic diets, regular training, yoga etc to counter the negative effects of high intensity sustained aerobic running. Methodology: Sixty women runners in the age 25 to 30 were included for the study. Thirty were regular yogasana and pranayama practioners and the other thiry did not practice any yoga before they participated in their first 10 k run of their life. The Upper Respiratory Tract Infection sysmptoms were measured throuh the WURSS-44 and the scores were analysed applying the Covariance technique. Results: ANCOVA indicated that the groups differ significantly (p= 0.006 and obtained F = 8.03) with homegeneity of slopes showing non significant levels. Conclusion: Yoga practiced group of women better protected agaisnt the URTI symptoms post their first 10 k run activity when compared to the non yoga women group of the study.

KEYWORDS : Regular physical activity, immunosuppression

INTRODUCTION

Back ground for the study: Exercise in general is recognised as healthful and would also enhance the immune status of individuals who regularly participate in physical activity programs (Walsh NP, Gleeson M, Shephard RJ, Gleeson M,et.al. 2011). Several studies recognised the importance of physical activity intervention for the prevention of several non communicable diseases (Matthews CE, Ockene IS, Freedson PS, et.al. 2002). As the immunity enhances, individuals tend to gain more preventive capacity from the communicable diseases also. Exercise immunologists agree that the physical activity would enhance the immunity of individuals both mucosal and T cell mediated. There have been several contentious issues in this area, especially with respect to the intensity (Gleeson M, Williams C. 2013), duration of sustained exercise and its effects on the immunity and the inflammatory status of the individuals. Medium intensity aerobic exercise may be good for the indiviudals in terms of immunity, but very high intensity sustained long duration aerobic exercises like marathon running may be detrimental to the immunity levels of the individuals (Kakanis MW, Peake J, Brenu EW, et.al. 2010). It has been identified that very high intensity sustained aerobic running could cause for the temporary suppression of cell mediated and also mucosal immunity making the athlete infection prone temporarily soon after the termination of such high intensity aerobic running like half marathon and marathon running. This may be due to imbalance in the pro and anti-inflammatory cytokines (Gleeson M, Bishop N, et.al. 2013) during such kind of stress condition, as the extreme physial stress could cause for the secretion of several cytokines and myokines. Reduced T cell proliferation is also seen during high intensity long duration running causing reduced cell mediated immunity temporarily. Mucosal immunoglobulins were seen suppressed significantly during the high intensity exercise programs and this is seen even among the well trained individuals. Temporary loss in mucosal immunity due to reduction in the sysnthesis of salivary immunoglobulins could cause for the respiratory tract infections and sometimes these infections could be fatal to individuals. Bronchial airway inflammatory conditions during high intensity aerobic running (Couto M, Silva D, et.al. 2013) could lead to airway infection especiall the Upper Respiratory Tract infections (Bermon S. 2007). These infections could cause for disturbance in the training program and many a time they may cause severe loss of function in lungs (Ahmadinejad Z, Alijani N, et.al.2014). Hence, it is essential for indivduals to be vigilant about these exercise related problems before being involved in high intensity sustained aerobic activities like 10 K runs, half marathon and marathons etc. Though there may be varaibility with respect to these immunosuppression and pro inflammatory status through the high intensity exercise among different individuals, it is always ideal to keep necessary safeguards like nutrition, lifestyle modifications etc before involving in such high stress activities (Moreira A, Delgado L, et.al. 2009). There are several nutrition programs which can prevent oxidative stress, inflammatory stress etc and likewise yoga may be useful in enhancing the immune function, anti-inflammatory status of individuals if practiced regularly.

Hence, the present study was envisaged to know if regular yoga practice would be able to provide protection from the oxidative, pro-inflammatory and immunosuppression effects of high intensity long duration running by recreational runners. Recreational runners may not train regularly like professional runners (Gleeson M.2006), who may be at a high risk of these immunosuppression due to their low level of physical condition for such high intensity long duration activities and may be prone for frequent Upper Respiratory Tract Infections.

Methodology: Women runners who participated in recently concluded 10 k run in hyderabad were contacted and included into the study. Thirty women who have been regularly practicing yogasanas

and pranayama and thirty women runners who never practiced yogasanas and pranayama were included in two groups for the study. The age range of the runners was between 25 and 30 years. Most of them are recreational runners only were participating in a long run for the first time in their life. Though the intensity of the run was not monitored for the sake of the study, the women runners tried to complete the 10 k course in a descent time and with good effort. The URTI symptoms of the runners of both the groups was collected through the Wisconsin Upper Respiratory Symptom Survey - 44 (WURSS-44), which was downloaded from the Website of the Department of Family Medicine and Community Health, of University of Wisconsin with proper permission and acknowledgement. The WURSS-44 was applied both before the start of the 10 k event and after one day of the conclusion of the event. The miniumum is zero (for no symptom of the URTI) and maximum is 224 (complete symptoms of URTI in every factor analysed). Higher score indicates higher infection rate and vice versa. The pre run and post run scores of both the groups (Yoga group and non yoga group) were analysed with the help of Analysis of Covariance (ANCOVA) with proper test of homogeneity of slopes. Descriptive mean analysis was also done to explain the final results of the study.

Results of the study: Table I indicates that the post run means for both yoga group (45) and non Yoga groups (58.1) increased, signifying the effect of the 10 k run on the URTI status of the women runners of both groups. Analysis of Covariance as depicted in table II indicates that both groups significantly differ in their post run URTI score when comapred to their respective pre run URTI scores (at P = 0.0063). Test for homogeneity

Table I

Pre-run, Post-run and Adjusted Post-run means for URTI symptom score

Groups/Means	Pre-run	Post-run	Adjusted Post-run
Yoga group	29.43	45	45.86
Non Yoga group	31.13	58.1	57.24

Table II

Analysis of Co-variance for URTI symptom score

Source	SS	df	MS	F	P
Adjusted means	1912.88	1	1912.88	8.03	0.006352
Adjusted error	13583.69	57	238.31		
Adjusted total	15496.57	58			

Table III

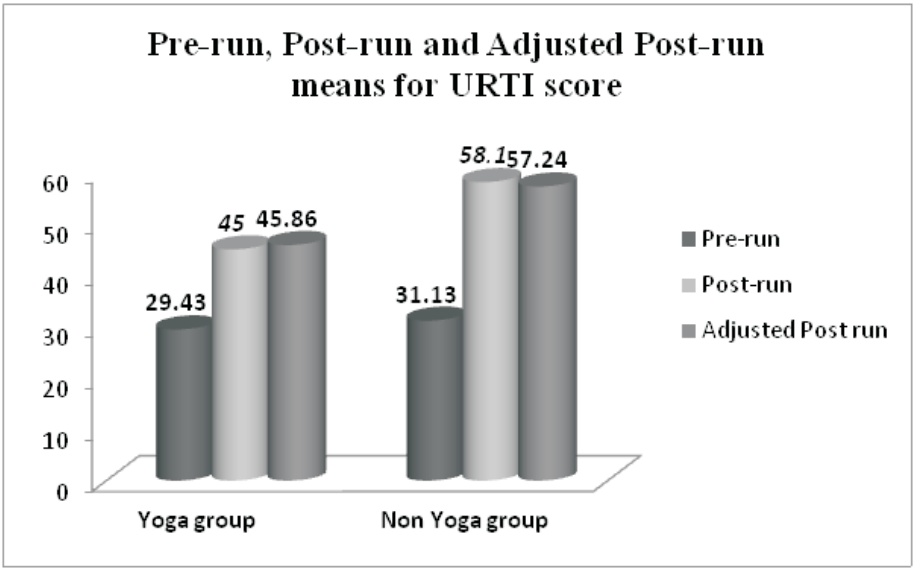
Test for Homogeneity of regression

Source	SS	df	MS	F	P
Between regressions	31.73	1	31.73	0.13	0.719789
Remainder	13551.96	56	242		
Adjusted error	13583.69	57			

of regression (table III) indicates that there was no significant difference (P= 0.72 and F= 0.13) among the groups and they were found as non hetegogeneous and the statistics was proper, hence the results of the study is significant. The results of the study is also depicted in Graph I for easier

interpretation of the results.

Graph I



Discussion on results: The results indicate that the Yoga group was able to resist the URTI symptoms better when compared to the non yoga group after their first 10 k run of their life. Yoga seems to be protective in terms of mucosal immunity especially in terms of providing resistance to the Upper Respiratory Tract Infections of the runners post their high intensity sustained aerobic long distance activities like 10 k run. Yoga seems an effective tool in terms of providing anti-inflammatory capacity especially with respect to bronchial mucosal inflammations. Other issues like the efficacy of yoga as anti-oxidative needs to be studied further.

Conclusion from the study: Women who have been practicing Yogasanas and pranayama regularly experienced better protection from Upper Repiratory Tract Infection symptoms when compared to women who had not practiced yogasanas and pranayama regularly, post their first 10k running activity.

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