

A comparative study on influence of asana and physical training on haematological and psychological profile of college level Sports Person

Mr. Sashikanta Khuntia^{1*}, Prof (Dr.) Gaganendu Dash²

^{1*}Senior Faculty Associate, KIIT School of Sports and Yogic Sciences, KIIT Deemed to be University, Bhubaneswar (Odisha), ORCID ID: 0000-0003-4773-0601 Email ID: sashikanta.khuntiafyo@kiit.ac.in

²Director General Sports & Yoga, KIIT School of Sports and Yogic Sciences, KIIT Deemed to be University, Bhubaneswar (Odisha), Email ID: dg.kssys@kiit.ac.in

Abstract

Present study was based on 90 college level boys, between the age group of 19 to 22 years of KIIT University, Odisha. Randomly divided into three groups as asana group administered with scheduled asanas, physical training group with specialized exercises and control group without any specialized training, the duration of experiment was for 12 weeks. The pre and post experiment haematological and psychological variables were analysed and revealed that, both the experimental groups associated with asana and physical training showed significant gain in performance of subjects in haematological variables under present study like WBC and RBC, but influence of yogasana was significantly better than physical training for WBC. Iron concentration was improved in yoga group only and neither of the experimental groups could influence the haemoglobin (Hb) concentration of the subjects. Both anxiety and aggression were improved in both the experimental groups. Anxiety was reduced with greater intensity in asana group than in physical training group. In contrary aggression was enhanced in physical training group with significantly larger intensity than asana group.

Keywords: Rugby Footballer, Physical, Pranayama, Psychological, Swimmer

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Introduction

Asana is a state of steadiness as well as a series of postural movements that can help bring one to that state of steadiness. In the most esoteric sense, it is a reflection of the mind manifests through the body. Further many saints and the electronic media coverage on benefits of yoga added the interest of the mass to be attracted and made this a part of life style in Indian culture. Further, yoga has managed making its presence felt in global lifestyle as well.

Physical exercise triggers physical fitness. Physical fitness may be defined as a state of well-being with good physical or mental health. It is a vital part of life. Further it is an indicator of one's ability to carry out and take pleasure in day to day physical activities with easiness. Physiology deals with many functions of human body. It is maintained through hormonal, electrical and chemical communications. Haematology is a study and discipline of science which includes the various parameters of blood functioning in living system, monitored through estimates on some parameters. Sileshi et.al. (2021) opined that, hematological factors are useful towards predicting best performances of the players in various sports.

Psychological researches are based on psychological variables. Those play an important part for providing better knowledge of different psychological aspects through researches. Among the dominant psychological variables anxiety and depression are important for a player.

Materials and Methods

Ninety college level boys of KIIT University, Bhubaneswar, Odisha between the age group of 19 to 22 years were taken at random as subjects. All the subjects were divided randomly into three groups. They was one experimental group named as asana, physical training and control group, having 30 numbers of students in each group. The asana group was administered with scheduled asanas and physical training group with specific physical exercises.

Keeping in view the viability or feasibility of the present study, the following asanas were given as treatment to the subjects for 12 weeks. Three classes in week with duration of 40 minutes each were the timing schedule for the asana group.

Asana

1. Vriksasana, 2. Tadasana, 3. Natarajasana, 4. Padmasana, 5. Ardha-matsyendrasana, 6. Ustrasana, 7. Bhujangasana, 8. Dhanurasana, 9. Ardha-shalabhasana, 10. Sarvangasana, 11. sputa-vajrasana and 12. Shavasana

Students were instructed to maintain each yogasana at least for a period of 30 seconds.

Physical training group was administered with combination of scheduled exercises as designed by the experts in the field. The control group was denied either the physical activity or yoga for the experimental period of 12 weeks. The parameters, taken as components of

*Author for Correspondence: sashikanta.khuntiafyo@kiit.ac.in

haematological profile to study the effect of both the experiments were WBC, RBC, Hemoglobin content and Iron content. The study was also delimited to psychological variables like Anxiety and Depression.

The estimates with regard to all above parameters on every subject were recorded before and after the experimental period of 12 weeks, subjected to statistical analysis and presented in Table 1 and 2 for comparison between groups through ANOVA.

Results and Discussion

Results obtained as average haematological parameter estimates at pre and posttest level across groups are presented in Table 1. The pretest WBC counts were found to be homogeneous with estimates of 6613.01 ± 116.48 , 6640.40 ± 117.30 and 6635.70 ± 131.66 per mm^3 , for control, asana and physical training group, respectively without significant difference between those. Corresponding posttest estimates were 6659.34 ± 127.41 , 7529.73 ± 130.71 and 6861.70 ± 130.95 per mm^3 , respectively revealing the count in control and physical training group significantly lower than that of asana group. No significant difference was observed between control and physical training group. The present findings corroborates the findings of Fukuhara et al (2020) among infants.

The average RBC counts were found to be statistically similar with estimates of 4.86 ± 0.05 , 4.84 ± 0.06 and 4.87 ± 0.07 million/ mm^3 , for control, asana and physical training group, respectively before the experiment without significant difference between those. Corresponding posttest estimates were 4.85 ± 0.06 , 5.33 ± 0.06 and 5.51 ± 0.05 million/ mm^3 , respectively with significantly higher values in both the experimental groups than the control group in the present study. This is in line with the findings of Banerjee et al (2019).

The pretest haemoglobin content were found to be 13.56 ± 0.09 , 13.72 ± 0.06 and 13.81 ± 0.13 g/dL for control, asana and physical training group, respectively without significant difference between those. Corresponding posttest estimates were 13.67 ± 0.50 , 13.80 ± 0.08 and 13.94 ± 0.13 g/dL, respectively revealing no difference among three groups.

The average iron content were found to be homogeneous with estimates of 84.03 ± 1.93 , 85.23 ± 1.76 and 84.20 ± 1.83 $\mu\text{g/dL}$, for control, asana and physical training group, respectively before the experiment without significant difference between those. Corresponding posttest estimates were 83.17 ± 1.63 , 91.73 ± 1.50 and 84.07 ± 1.41 $\mu\text{g/dL}$, respectively with significantly higher values in asana group than both control and physical training group without any significant difference between the later two groups.

Positive effect of asana on haematological variables like WBC, RBC and iron might be due to the great

techniques to relax the mind and body triggering optimal physiological function. During the process, the body relaxes and mind stays more alert. Overall, the body starts functioning in the right way. The main body parts get affected because of which the blood circulation in the body becomes smooth. This corroborates with the findings of Sharma and Kumar (2016)

Both the experimental groups associated with asana and physical training showed significant gain in performance of subjects in haematological variables under present study like WBC and RBC, but influence of yogasana was significantly better than physical training for WBC. Further, RBC count influenced positively in both the experimental groups in the present study in a similar manner. Iron concentration was improved in yoga group only. Physical training had no effect on this parameter. Besides, neither yoga nor DPT could influence the haemoglobin (Hb) concentration of the subjects in the present study.

Results obtained as mean psychological parameter scores at pre and posttest level across groups are presented in Table 2. The pretest anxiety scores were found to be 99.17 ± 1.78 , 96.77 ± 2.01 and 97.57 ± 1.57 for control, asana and physical training group, respectively without significant difference between those. Corresponding posttest estimates were 98.57 ± 1.54 , 85.47 ± 1.26 and 90.70 ± 1.23 , respectively revealing the anxiety in control group significantly the highest and asana group recorded the lowest anxiety and physical training group recorded significantly greater anxiety than asana and significantly lower anxiety than the control group in the present study. Commodari (2010) opined similarly in a study with children.

The pretest aggression scores were found to be 166.90 ± 3.28 , 172.30 ± 3.80 and 175.77 ± 4.60 for control, asana and physical training group, respectively without significant difference between those. Corresponding posttest estimates were 169.43 ± 3.13 , 177.93 ± 3.85 and 191.60 ± 5.41 , respectively revealing the aggression in control group significantly the lowest. Physical training group recorded the highest aggression and asana group recorded significantly greater aggression than control and significantly lower aggression than the physical training group in the present study.

Both anxiety and aggression were improved in both the experimental groups. Anxiety was reduced with greater intensity in asana group than in physical training group having significant difference between them. Aggression was enhanced in physical training group with significantly larger intensity than asana group. The present results on psychological parameters are in line with the findings of Dhananjai et al (2019) and Jimenez et al (2022) in experiment with young adults.

Table 1. Comparison of averages for haematological parameters

Parameters	Stage of experiment	Control Group	Asana Group	Physical Training Group	p value
	Pre test	6613.01 ± 116.48	6640.40 ± 117.30	6635.70 ± 131.66	0.614

WBC count (cells/mm³)	Post test	6659.34 ^a ±127.4	7529.73 ^b ±130.7	6861.70 ^a ±130.9	<0.001
RBC count (million/mm³)	Pre test	4.86±0.05	4.84±0.06	4.87±0.07	0.278
	Post test	4.85 ^a ±0.06	5.33 ^b ±0.06	5.51 ^b ±0.05	<0.001
Hb concentration (g/dL)	Pre test	13.56±0.09	13.72±0.06	13.81±0.13	0.213
	Post test	13.67±0.50	13.80±0.08	13.94±0.13	0.085
iron content (µg/dL)	Pre test	84.03±1.93	85.23±1.76	84.20±1.83	0.311
	Post test	83.17 ^a ±1.63	91.73 ^b ±1.50	84.07 ^a ±1.41	<0.001

Means with different superscripts differ significantly (p<0.05) in a row

Table 2. Comparison of averages for psychological parameters

Parameters	Stage of experiment	Control Group	Asana Group	Physical Training Group	p value
Anxiety	Pre test	99.17±1.78	96.77±2.01	97.57±1.57	0.245
	Post test	98.57 ^a ±1.54	85.47 ^c ±1.26	90.70 ^b ±1.23	<0.001
Aggression	Pre test	166.90±3.28	172.30±3.80	175.77±4.60	0.314
	Post test	169.43 ^a ±3.13	177.93 ^b ±3.85	191.60 ^c ±5.41	<0.001

Means with different superscripts differ significantly (p<0.05) in a row

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