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Original Research Articles

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Effect of Intensity Manipulation of Olympic Lift Training on the Sprinting Ability of 100 Meters Sprinters

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***Satpal Yadav*[2]**

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Abstract

The purpose of the present study was to assess the effect of intensity manipulation of Olympic lift training on the sprinting ability of 100 meters sprinters. The subjects were 30 male elite sprinters of 18 to 25 years of age group from Lakshmibai National Institute of Physical Education, NERC. They were assigned into 2 groups: A (Intensity manipulation of Olympic lift training; n=15) and B (control; n=15). The training was given for a period of 6 weeks. The experimental groups were trained thrice a week, while the control group continued with their daily routine work. The performances of sprinting ability of the subjects were taken by the Smart Block. The different sprinting ability- Run time, Raw time, Reaction time, Peak force (R), Peak force (L) Push time and Timed runs were measured with the use of a smart block The between-group differences were assessed using the student's t-test for dependent data. The level of p 0.05 was considered significant. Significant between-group differences were found for Run time (t=3.00*), Raw time (t=3.03*), Reaction time (t=5.84*), Peak force (R) (t=4.40*), Peak force (L) (t=3.82*), Push time (t=2.48*), and Timed runs (t=2.93*), since the computed value of t for all the dimensions were greater than the tabulated t.05 (14) =2.145. The result was found that the sprinters significant difference in their sprinting ability components.

Keywords: Intensity Manipulation, Olympic Lift Training, Sprinting Ability, Sprinters, Smart Block, University Athletes.

Introduction

Today the sports persons are trained scientifically with the latest training methods and sophisticated instruments for higher performance improvement in different sphere of sports. Training is not a recent discovery. In ancient times, people systematically trained for military and Olympic endeavors. Today athletes prepare themselves for a goal through training (Tudor, 1999). In the recent years greater stress has been laid on the quality rather than the quantity of training. The sports scientists and experts of sports want their sportsman to extract maximum achievement from their training procedure without causing too

much strain on them (Asha, 1980). Over the years this form of training has been employed extensively to improve many power oriented movements in a variety of sports. There are many variations on the theme of power training. Some of these training principles include plyometrics, assisted and resisted training and speed and acceleration drills. A popular method used to increase athletic power is Olympic lifting (ie power cleans, push presses, snatches, jump jerks and their variations) conducted in the weight room. This has traditionally been seen as an effective way of producing general explosive ability. However, considering motor skill and neurological aspects of movement, the logic of employing Olympic Lifts in power training becomes unclear. Therefore, the interpretation and application of Olympic lifting to the development of power will be considered (Takano, 1992).

Smart block will increase the athlete personal best. Smart block help to customized start optimized each athlete the unique ability. Smart block is a brilliant invention to uses panel technology smart block uses the audible "On your marks" at audible set and audible gun start smart block store performance status for each run. Smart block help your athlete achieve faster reaction time.

Methodology

A total thirty (15 experimental and 15 control) athletes of Sports Authority of India, Guwahati has been selected for this study. Their mean height, weight, and age were 1.87±0.04m, 76.5± 5.2kg, 23.5± 0.4 years. The *purposive sampling technique was used to* attain the objectives of the study. All the subjects, after having been informed about the objective and protocol of the study, gave their consent and volunteered to participate in this study. They were further divided into two groups N = 15 each (i.e., N1=15; Experimental and N2=15; and Control). The study was further delimited to selected sprinting ability components i.e., (**Run time, Raw time, Reaction time, Peak force (R), Peak force (L) Push time** and **Timed runs**).

The Instant Feedback App provides the ease-of-use and actionable, measureable data that coaches need to make the effective adjustments necessary to improve the performance of their athletes. The screenshot of the Instant Feedback app, with accompanying individual screenshots explaining the type of data that is captured. The ones measured were as follows:

- **Run Time: Run time** gives time runner an indication of whether their efforts/changes resulted in a faster time. The score is recorded to the nearest 1/10th of a second.
- **Raw Time: Raw Time** shows how fast the athlete ran once they started moving. This shows the real effort of the run and disregards reaction time.
- **Reaction Time: Reaction Time the t**ime from the gun sounds to when the athlete pushes on the pedals.
- **Peak Force (R):** Peak Force is the highest force generated from pedals

during the drive off the blocks. This is as (R) for right pedal. The score is recorded to the pounds (lbs).

Peak Force (L): Peak Force is the highest force generated from pedals during the drive off the blocks. This is as (L) for left pedal. The score is recorded to the pounds (lbs).

- **Push Time: Push time** shows how long an athlete pushed on the pedals.
- **Timed Runs: Timed Runs** Eye-Beams can be set at a particular distance to time a run.

Six Week of Olympic Lift Training Programme

Subjects were trained thrice a week i.e. on Monday, Wednesday and Friday. The subjects performed Power Clean, Snatch, Push Press, Push jerk and Split jerk. 10-15 repetitions in each of the 3 sets, with 50% weight of 1 repetition maximum and with 3 min recovery period in between each set. Finally for last three weeks the exercises were performed with 60% weight of 1 R.M., 10-12 repetitions in each of the 3 sets with 2 min recovery period in between sets.

Figure 1.
A-Power Clean.
B- Romanian Dead Lift.
C- Hang.
D- Split Jerk.
E- Clean Push Press.
F- Hang Snatch.

The Instant Feedback App provides the ease-of-use and actionable, measureable data that coaches need to make the effective adjustments necessary to improve the performance of their athletes. Student's t-test was used to assess the between group differences. The level of $p \leq 0.05$ was considered significant.

The study was conducted to assess the effects of intensity manipulation of Olympic lift training on Sprinting ability of 100 meters Sprinters. The statistical analysis of data collected on thirty (N=30) subjects. The finding have shown the

significant value of F- ratio's for selected variables in the experimental training group as compared with the control group. No significant changes over that 4-week period were noted in the control group. The graphical representation of responses has been exhibited in Fig.2.

The hypothesis was rejected because of significant differences were obtained in the sprinting ability of sprinters. The results pertaining to significant difference, if any, between experimental and control groups were assessed by "t" test and are presented in following tables:

Table 1

Sprinting ability of Experimental Group Paired Samples t-Test

Variables	Olympic Lift			Control Group		
	Pre	Post	t-value	Pre	Post	t-value
Run time	2.52	2.51	3.00*	2.53	2.53	0.77
Raw time	0.13	0.12	3.03*	0.13	0.13	0.55
Reaction time	2.40	2.29	5.84*	2.40	2.38	1.76
Peak force (R)	27.46	23.8	4.40*	27.13	28.53	1.12
Peak force (L)	52.26	59.2	3.82*	52.4	56.26	1.65
Push time	0.15	0.17	2.48*	0.148	0.159	1.31
Timed runs	0.16	0.19	2.93*	0.167	0.186	1.91

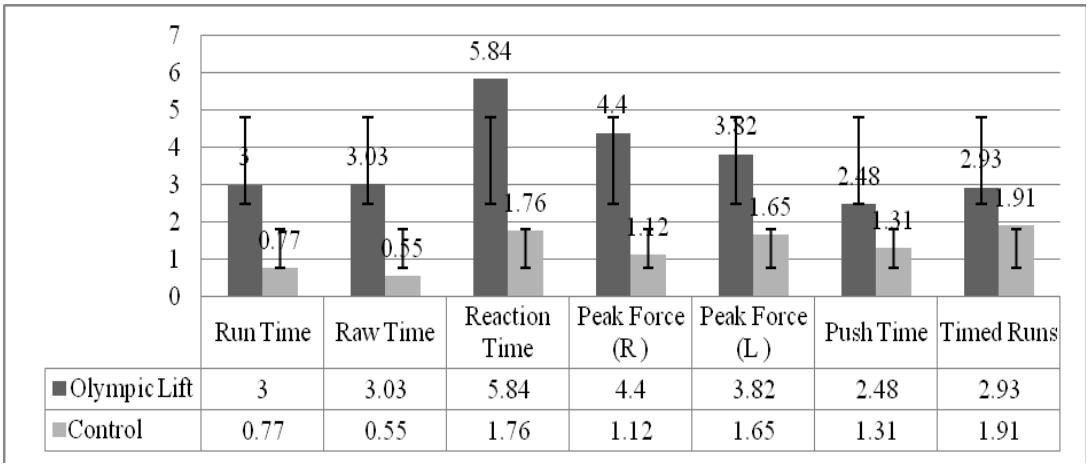

Figure-2.

Performance parameter of sprinting ability of sprinters before and after training

Significant between-group differences were found for **Run time** (t=3.00*)**, Raw time** (t=3.03*)**, Reaction time** (t=5.84*)**, Peak force (R)** (t=4.40*)**, Peak force (L)** (t=3.82*), **Push time** (t=2.48*), and **Timed runs** (t=2.93*), since the computed value of t for all the dimensions were greater than the tabulated t.05 (14) =2.145. Thus it is concluded that the sprinting ability *components of sprinters* found to be statistically significant.

Discussion

Weight training depends on the individual, though considers it an important part of training programme. If everything else is equal among sprinters, the strongest sprinter will be the winner. Be consistent in the way you set the blocks. Put your strong leg in front. Your starting position should be comfortable, balance. For better performance in sprinting emphasize should be as relaxed as possible while running. Keep mouth open slightly. Relax jaw and entire face, even eyes. Don't grit teeth. Proper running form helps to run efficiently and positions to move as quickly and powerfully as one can. The angle of your body to the ground should be slightly forward, so that pushing off the ground while running. The body should be straight but leaning slightly forward. Finally proper **Run time, Raw time, Reaction time, Peak force (R), Peak force (L) Push time** and **Timed runs** is important to running best. All the energy should be used to go forward. About two-third of the race is acceleration. Then enter the stage where sprinter try to maintain speed. Many races won and lost in the last 10 to 15 meters where the sprinter slowing down, trained sprinters just slowing down less than everyone else. How to become a better Sprinter, Carl Lewis and Tom Tellez. The factors that sprinters should look for setting up the starting block, the optimal 'set' position for an athlete, and what an athlete should do during the acceleration phase of the sprint to maximize performance. The present study showed that the between-group differences were found for **Run time** (t=3.00*)**, Raw time** (t=3.03*)**, Reaction time** (t=5.84*)**, Peak force (R)** (t=4.40*)**, Peak force (L)** (t=3.82*), **Push time** (t=2.48*), and **Timed runs** (t=2.93*), since the computed value of t for all the dimensions were greater than the tabulated t.05 (14) =2.145.

Conclusion

In conclusion, the present study suggests that 6-week intensity manipulation of Olympic lift training had significant effect on sprinting ability of sprinters. These data provide more scientific evidence to support the beneficial effect of intensity manipulation of Olympic lift training on sprinting ability and thus, such training may be recommended to improve physical and physiological based performance.

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A Comparative Study of Attitude & Participation in the Indigenous Sports Among the Tribal & Non-Tribal Females of Tripura

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Abstract

The purpose of the present study was to determine and compare attitude and participation in the indigenous games &sports among the tribal and non-tribal females of Tripura. For the study 100 tribal and 100 non-tribal (n=200) females were randomly selected as subjects from different colleges of Tripura. The age of the subjects are ranging from 18 – 23 years as per the college admission record.The data has been collected through self-made questionnaire which consist six (6) questions. To find out the attitude and participation the descriptive statistical technique was used to identify at 0.5 level of significance. The result showed that the attitude of tribal females towards indigenous games & sports is little higher than Non-tribal.But in terms of participation towards indigenous sports, the Non- tribal females were higher than Tribal females.From the above study following conclusions has been drawn that, the attitude towards indigenous sports of tribal and non-tribal females are more or less same. It means the tribal females are more aware and interested about the traditional games & sports then non-tribal femalesbut in regards of participation it has been cleared that the Non- tribal females participation are little more thanTribal females.From the study it has been identified that the tribal females are losing their participation day by day, so it is strongly recommended to all the Tribal and Non-Tribal females of Tripura to increase their participation in the indigenous games &sports to maintained their culture, tradition, health & fitness and also to help our next generation to know about thetraditional games & sports which will ultimately develop their society.

Key words: Indigenous, Games & Sports, Tribal, Non-Tribal, Female, Attitude, Participation etc.

Introduction

The North East part of India consists of eight states (Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura) Mainly Tripura is surrounded by Bangladesh. Time to time many people migrated into the state, for that reason Tripura mixed with various culture. There are near around nineteen (19) tribal communities namely (Tripuri, Reang, Jamatia, Khasia, Chakma, Uchai, Lushai, Kuki, Munda, Bhil, Noatia, Orang, Halam, Garos, Santal, Mog, Chaimal, Bhutia and Lepcha) More over Bengalis are also living there in a good numbers. All the communities have their own traditional games & sports and culture. The traditional games of Tripura are called Thwgmung and other traditional games of Tripura are AchugwiPhanSochlaimung, Bumanikotor, DukhwiSotonma, PhanSohlaimung, Kaldong or Kadong. LongoiChokmung, MuphukSagwnang, MustaSeklaio, RamtanLairo, Wabao Fan Sailaio, Wasago, Sohlaimmung and Cooking game. These are locally played sports that the people here indulges in and they ardent lovers of these sports activities. The traditional games of Tripura is locally known as 'Thwngma'. Briefly discussed are the traditional games below:

- **Dukhwi Sotonma:** DukhwiSotonma meaning tug of war is played by the children as well as the adult. It is a game where two opponent parties try to pull a rope towards them bringing the opposition nearer and the team who succeeds will declared as winner.
- **Kaldang:** Another game for the Tripuri Children, Kaldang is a game where two bamboos are taken which is joined together by small pieces of bamboos where the children can put their feet and climb past the bamboo.
- **Longoi Chokmani:** This is a very old game played by children of Tripura. It is a swinging game where a bamboo is held together by two long ropes which is kept hanging from a tree. Children sit on the bamboo seat and swing by pushing it forward.
- **Muphuk Sagwnang:** This is a game to test the strength of a man wherein a child is tied to the chest of the man and a rope is tied to its waist. Another player holds the end of the rope and there is pulling between them. The one who successfully pulls the other wins.
- **Musta Seklaio:** This is a game to test the strength of the wrist for it involves the hand only. A stake is the object of the game where both players hold it in its grip. One tries to keep it fixed while the other tries to pull it. Clearly the one who succeeds win.
- **Ramtan Lairo:** This game again is played to test the ability of an individual. Two bamboo posts are placed on the ground on which two udukhals are kept. Udukhal is a large wooden mortar used for husking grains. Two persons sitting facing each other try to join the udukhals and before that the player needs to pass through it.

Wabao Fan Sailaio: This is again a form of wrestling played with the help of bamboo pole. The two players need to push each other by pole and cross the given mark of victory.[1]

In the fast changing world, people are also moving with the trends. With that reason the indigenous culture are also left behind. The areas of sports arealso following the same pattern. We have seen many games and sports are there in the history of Tripura. But is also a bitter truth that people are losing their connection from the traditional sports. It may be the impact of mixing with other neighboring culture, urbanization or not properly commercializing the indigenous sports of Tripura.

Statement of the Problem

The problem of the present study is to compare the attitude and participation in the indigenousgames &sports among the tribal and non-tribal females of Tripura

Objective of the Study

1. To check the attitude of tribal and non-tribal females toward the indigenous games &sports of Tripura.
2. To check the participation of tribal and non-tribal females toward the indigenous games &sports of Tripura.

Delimitation

1. The study is delimited to Tribal and Non- Tribal females of Tripura.
2. The study is delimited to attitude and participation towards the indigenous games &sports of Tripura.
3. The present study is delimited to 200 females of Tripura
4. The study is delimited to indigenous games & sports of Tripura.

Limitation

Since the study is related to indigenous games&sports and the majority of the tribal communities were living in interior villages/hilly areas of Tripura. But due to growing effect of urbanization, modern culture, life style, education, rapid development of modern games & sports, economic and other factors, the indigenous peoples are losing their interest/attitudes and participation in the indigenous sports which will not be under the control of the researcher.

Hypothesis of the Problem

It is hypothesized that the attitude of Tribal females towards the indigenous games &sports will be better than Non-Tribal females of Tripura.

It is also hypothesized that the participation of Tribal females towards the indigenous games &sports will also be better than Non-Tribal females of Tripura.

Methodology

The purpose of the present study was to determine and compare attitude and participation in the indigenous games &sports among the tribal and non-tribal females of Tripura. Sources & selection: For the study 100 tribal and 100 non-tribal (n=200) females were randomly selected as subjects from different colleges of Tripura. The age of the subjects are ranging from 18 – 23 years as per the college admission record.Collection of data:The data has been collected through self-made questionnaire which consist six (6) questions and all the questions are valid, easy to understand and related to title. The researcher followed proper instructions & guidelines and approached systematically to collect valid data. Statistical Technique: To find out the attitude and participation the descriptive statistical technique was used to identify at 0.5 level of significance.

Results

The systematic interpretation and analysing the collected data by the researcher, the following findings are come out:

Parameter	Score of Tribal females (%)	Score of Non-Tribal females (%)	% of diff.
Attitude	75	72	3
Participation	34	40	6

at 0.5 level of significance

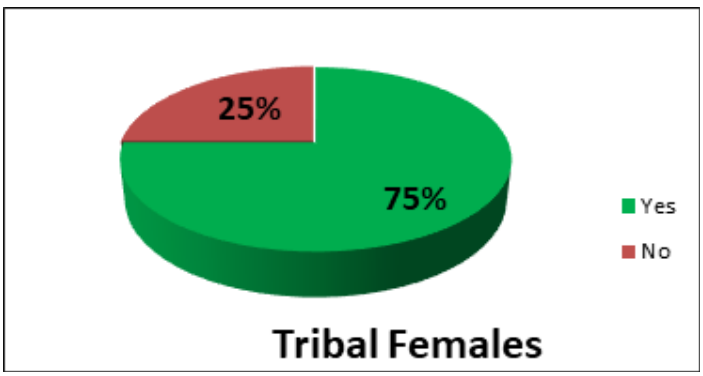

Chart 1: Attitude of Tribal females of Tripura in indigenous sports

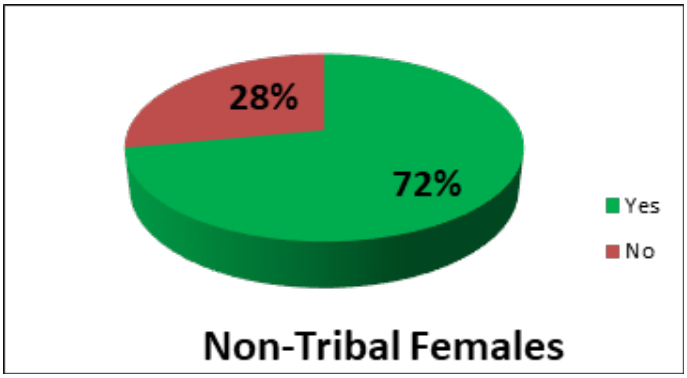

Chart 2: Attitude of non-tribal females of Tripura in indigenous sports.

In chart 1 & 2:It is cleared that in terms of attitude towards indigenous games &sports, the tribal females were scored little higher (3%) than the Non-tribal females. So as per the data, the hypothesis is accepted, as the Tribal females' attitude towards the indigenous games &sports is better than the Non- Tribal females of Tripura.

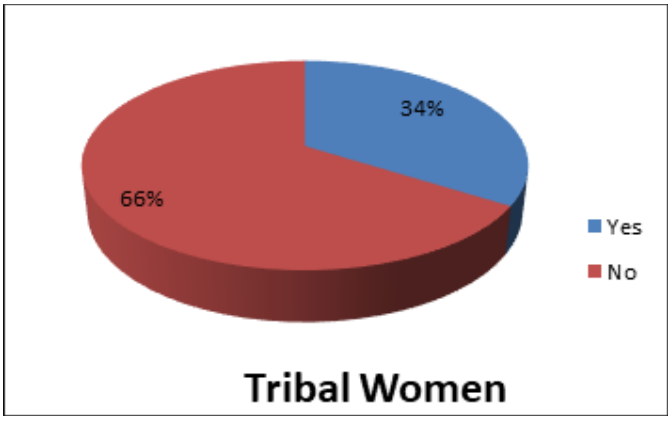

Chart 3: Participation of Tribal females of Tripura in indigenous sports.

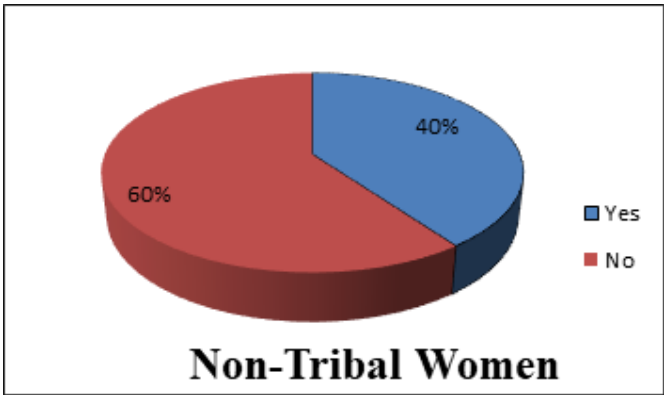

Chart 4: Participation of Non- Tribal females of Tripura in indigenous sports.

In chart 3 & 4:It has been cleared from the above chartthat in terms of participation towards indigenous games & sports, the Non- Tribal females were scored higher (6%) than the Tribal females. So as per the data, the hypothesis is rejected, as the Non-Tribal females' participation towards the indigenous sports is better than the Tribal females of Tripura. But it is also clearly evidence that the percentage of participation in indigenous games & sports by both Tribal & Non-tribal females of Tripura is very less, that is only 34% & 40% respectively.

Conclusions

From the above study following conclusions has been drawn that, the attitude towards indigenous sports of tribal and non-tribal females are more or less same. It means the tribal females are more aware and interested about the traditional games & sports then non-tribal females but in regards of participation it has been cleared that the Non- tribal females participation are little more than Tribal females. From the study it has been identified that the tribal females are losing their participation day by day, so it is strongly recommended to all the Tribal and Non-Tribal females of Tripura to increase their participation in the indigenous games & sports to maintained their culture, tradition, health & fitness and also to help our next generation to know about the traditional games & sports which will ultimately develop their society. Theoutcome of this study will also educate about indigenous games & sports of Tripura and the Tribal and Non-tribal females will understand about the findings of the study and which will encourage themselves to participate and which will ultimately helps our coaches and selector to identify the talent from indigenous games & sports.

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Relationship in Selected Kinematic Variables to the Performance in Long Jump

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Abstract

The purpose of the study was to find out the kinematic analysis of long jump with acne: ten subjects chosen from track and field match practice group and non-practice group studying in Lakshmibai National Institute of Physical Education, NERC, Guwahati. The subjects were ranging from 18-24 years of age. The study was conducted or controlled condition. Digital Videography technique was employed for conducting kinematic analysis of long jump with performance. The videography was done at moment of Take-off in sagittal plane. From the photograph, the stick figures were prepared by using Kinovea software and various kinematic variables were obtained at the take-off and the angles and centre of gravity were found out by using the Kinovea software. The criterion measure was performance of subjects in long jump. The selected biomechanical variables were: angle of elbow, shoulder, hip, knee, ankle and CG. Product moment correlations were calculated by the selected kinematic variables with the performance of long jump. The level of significant chosen was .05. The Angle of Elbow (L), Angle of Hip (R) have shown the significant value of coe cients of correlations. However in case of other variables that is Angle of Elbow (R), Angle of Shoulder (R), Angle of Shoulder (L), Angle of Ankle (L), Angle of Knee (R), Angle of Knee (L), Angle of Ankle (R) of the subjects shown insignificance value of coe cients of correlation were obtain.

Keywords: Kinematic, Digital Videography, Long Jump

Introduction

The basic technique use in long jumped has remained unchanged since the beginning of modern athletics in the mid-nineteenth century. The athlete sprints down a runway, jumps up from a wooden take-off board, and flies through the air before landing in a pit of sand. A successful long jumper must, therefore, be a fast sprinter, have strong legs for jumping, and be su□ciently coordinated to perform the moderately complex take-off, flight and landing maneuvers. The long jump has been widely studied in recent years. Two models exist in the literatures which define the relationship between selected variables that affect performance. Both models suggest that the critical phase of the long jump event is the touch-down to take-off phase, as it is in this phase that the necessary vertical velocity is generated. Many three dimensional studies of the long jump exist, but the only studies to have reported detailed data on this phase were two-dimensional in nature. In these, the poor relationships obtained between key variables and performance led to the suggestion that there may be some relevant information in data in the third dimension. So the aims of this study were to conduct a three-dimensional analysis of the touch-down to take-off phase in the long jump and to explore the interrelationships between key variables.

Method and Materials

Participants:

In order to do comprehensive analysis of kinematic variable of long jump technique ten male long jumps were selected as the subject for the study. For the purpose of the study 10 long jump athletes of 18 to 24 years was selected as subjects. As the subjects were undergoing training for a considerable period.

Statistical Analysis

To analyse the relationship in selected kinematic variables of long jump performance of male long jumpers, the analysis of “Pearson Correlation” test was applied at 0,05 level of significance.

Instruments

To analyse the relationship in selected Kinematic variables to the performance in long jump of male athlete of LNIPE,NERC, the following instruments used for collection of data were iPhoneX, Kinovea software and computer system.

Results

In order to ascertain the linear kinematics & angular kinematic variables namely angle of elbow (R), angle of elbow (L), angle of Shoulder(R), angle of Shoulder (L), angle of hip (R), angle of hip (L), angle of knee(R), angle of knee(L), angle of ankle (R), angle of ankle(L) and linear kinematics i.e, height of centre of gravity at the moment take off in long jump. Pearson correlation coefficient was used for comparison and results are presented as below

Table 1:

Relationship in selected kinematic variables to the performance in long jump technique (N=10)

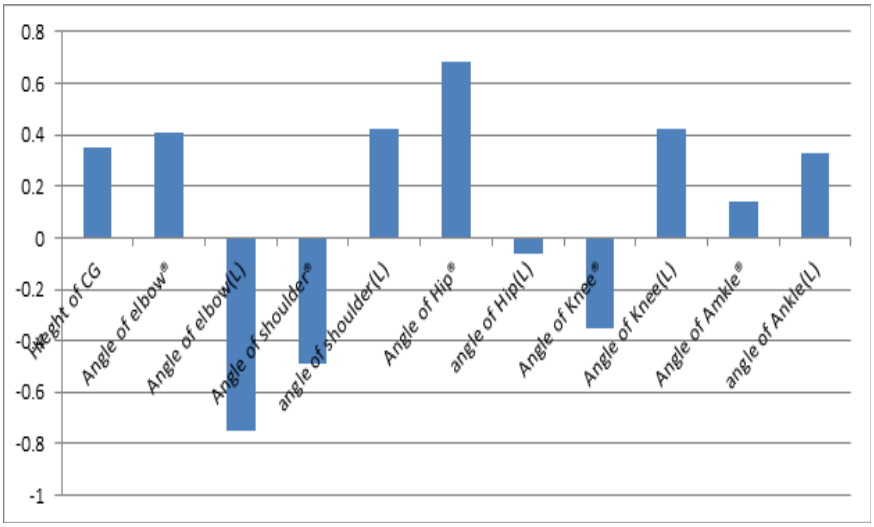
s. no	Variables	Co-efficient of correlation "r"
1	Height of CG	0.35
2	Angle of elbow (R)	0.41
3	Angle of elbow (L)	-0.75*
4	Angle of Shoulder (R)	-0.49
5	Angle of Shoulder (L)	0.42
6	Angle of Hip(R)	0.68*
7	Angle of Hip (L)	-0.06
8	Angle of knee (R)	-0.35
9	Angle of knee(L)	0.42
10	Angle of ankle (R)	0.14
11	Angle of ankle (L)	0.33

N=10

Level of significant = 0.05

Table r.05(8)=0.632

As shown in Table 1, the table indicated that the Kinematic variables namely Angle of Elbow (L), Angle of Hip (R) shows the significant relationship with the performance in Long Jump. However in case of other variables that is at Angle of Elbow (R). Angle of Shoulder (R), Angle of Shoulder (L). Angle of Ankle (L), Angle of Knee (R). Angle of Knee (L), Angle of Ankle (R), of the subjects is not found highly correlated.



Discussion

As show by the results of the subject that the significant relationship were found in Angle of Elbow (L), Angle of Hip (R) with the performance of the subjects in long jump which indicate that the contribution of these variables to the performance in Long Jump at the moment of take-off was more than other selected variables. It was indicates their importance for ecient take-off in long jump technique. Scientist, physiologist and Bio-mechanist have held the view that anthropometric measures and physical components of athletes have a lot to do with the performance. The insignificant values of coecient of correlation or low correlation shown by most of the variables does not mean that those variables do not contribute to the performance. They might have contributed to the performance, but the insignificant value of correlation of such variables with performance might be due to the small sample size and non-availability of sophisticated recording techniques. As the results show that a significant relationship exists between performance in long jump and certain biomechanical variables, whereas other variables have shown insignificant relationship with the performance of subjects in long jump, therefore the hypothesis as stated earlier that there may not be any significant relationship between selected biomechanics variables with the performance of athletes in long jump is partially rejected.

Conclusion

Keeping the result and discussion in view the significant relationship were found in Angle of Elbow (L), Angle of Hip (R) have shown the significant value of coefficient of correlation. Angle of Elbow(R), Angle of Shoulder(R), Angle of Shoulder (L). Angle of Ankle (L), Angle of Knee (R), Angle of Knee(L), Angle of Ankle (R), of the subjects shown insignificant relationships with the performance of take-off in the long jump.

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Estimation of Judo Performance on the Basis of Selected Physical and Physiological Variables of National Level Judoka's in Different Weight Categories

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Abstract

Judo is a martial art that was born in Japan, and it is now known around the world as an Olympic sport. Among contact games judo has become a very popular game in the world.

Judo was established in 1882 by combining jujitsu, a form of wrestling, with mental discipline. Almost all the nations play the game both for enjoyment and competition. First it was formulated by Dr.Jigaro Kano in Japan. The purpose of present study was to find out the analysis of selected physical and Physiological variables in 48 weight category. The subjects for this study were selected from Different states of India. A total of 105 female judo players from different state of India were selected, 15 from each weight Category. The Physical and the Physiological variable was collected by the suitable test and under control laboratory. The regression analysis technique was used for analysis of data. The study finds out that the there is.

Keywords: Judo, Martial arts, Jujitsu, Physical, Physiology

Introduction

The present day in Indian society, sports holds a prominent place in modern life. Millions of people participate in sport, watch and hear about them and spend billions of dollars on sports related activities and equipment. This has led to the competitive element in sports, as now sportsmen participate to win and achieve laurels for them as well as for their country. Sports is also one of the factor solidifying national integration and developing national character, which are the most urgent needs of Competitive sports have a very high value in society, the physical educationists and coaches are trying to bring new innovations which will improve upon the attainment of top performance of sportsmen for present and future. The modern trends in preparation of sportsman are to proceed in a scientific manner and to take the help of allied sciences to achieve the top level of performance. Judo is a martial art that was born in Japan, and it is now known

around the world as an Olympic sport. Judo was established in 1882 by combining jujitsu, a form of wrestling, with mental discipline. The roots of jujitsu lie in sumo, which has a long, long history; sumo is mentioned in the Nihon shoki (Chronicle of Japan), a document from 720 that describes the history of Japan from the mythical age of the gods until the time of Empress Jito, who reigned from 686 to 697.

Judo is generally compared to wrestling, but it retains its unique combat forms. As a daughter to Jujutsu these techniques are also often taught in Judo classes. Because the founder was involved in education (President of Tokyo University) Judo training emphasizes mental, moral and character development as much as physical training. Most instructions stress the principles of Judo such as the principle of yielding to overcome greater strength or size, as well as the scientific principles of leverage, balance, efficiency, momentum and control. SeiryokuZenyo (maximum efficiency) and Jita Kyoei (mutual welfare and benefit) are the best known of the principles of Judo.

Materials

Total of 105 female judo players from different state of India were selected, 15 from each weight Category. All the physical variables data were collected through the suitable test and physiological variables were collected by using the controlled laboratory.

Method

For the purpose of study 15 female judo player who participate in the National level from the 48 age category. Random sampling technique were used for the purposed of study.

Result

Regression analysis were used to find out the prediction between the selected kinematic variables.

Figure- 1

Plot of normal probability in relation to residuals distribution of 48 kilogram weight category Judo player

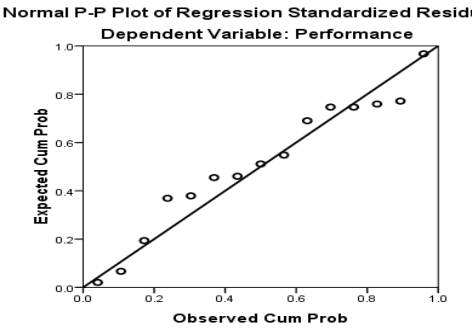

Figure- 1 shows the normal probability plot. All the observations are scattered near to the expected line.

Table- 1

Model summary related to estimation of 48 kilogram weight category Judo players performance on the basis of selected physical and physiological variables

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.957	.915	.908	.72777
a. Predictors: (Constant), Flexibility				
b. Dependent Variable: Performance				

Table- 1 shown the R2 is .915 which is the highest model and therefore the model will developed. As the R2 value is 0.915 which means the variables explain 91.5% variation of judo performance. The model is established on the basis of flexibility.

Table- 2

ANOVA table related to estimation of 48 kilogram weight category Judo players performance on the basis of selected physical and physiological variables

ANOVA						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	74.048	1	74.048	139.805	.000
	Residual	6.885	13	.530		
	Total	80.933	14			
a. Predictors: (Constant), Flexibility						
b. Dependent Variable: Performance						

Above table- 2 shows that the usefulness of all created models. The model is found useful since the value of "F" is found significant in the case.

Table- 3

Coefficients related to estimation of 48 kilogram weight category Judo players performance on the basis of selected physical and physiological variables

Coefficients										
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF	
1	(Constant)	-1.846	1.919		-.962	.354	-5.991	2.299		
	Flexibility	1.415	.120	.957	11.824	.000	1.156	1.673	1.000	1.000
a. Dependent Variable: Performance										

Above table 3 shows the unstandardized and standardized coefficient in all models. Since 'B' and 'Beta' are used for developing the model. Since the t-value of flexibility is less than 0.05. Thus the flexibility variable can develop a model on dependent variable i,e performance.

Discussion and Finding

The significance relationship was found between the independent variables physical variable flexibility on the dependent variable performance of judo. Thus regression model is developed and hence the physical variable may contribute to the Judo performance. The more the flexibility more will the gain in performance. Since the flexibility may help the athlete in maintaining their balance while performing the judo skills.

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Effect of Varied Intensity and Duration of Surya Namaskar on Total Cholesterol Level and High Density Lipoprotein of 45-50 Age Groups

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Abstract

The purpose of the study is to determine the effect of varied intensity and duration of Surya Namaskar on total cholesterol level and high density lipoprotein of 45-50 age group. Twenty sedentary people are randomly selected of Guwahati city as subject of the study. Varied intensity and duration of Surya Namaskar were properly introduced with demonstration to the subject before the practice start. The duration of the practice was 35-40 minutes in morning with three days in a week for the period of three months. The variables total cholesterol level and high density lipoprotein for the present study. Pre-test and post-test were conducted in order to identify the significance difference. The collected data was analyze by applying "t" test. The result shown that there is a significant effect of varied intensity and duration of Surya Namaskar on total cholesterol level and high density lipoprotein (HDL). Surya Namaskar is effective in reducing total cholesterol level and increasing HDL.

Keywords :- Surya Namaskar, cholesterol level, high density lipoprotein.

Introduction

Yoga is a physical, mental and spiritual or practice or discipline which originated in India. It is the science of right living in a right way, which is intended to be incorporated in daily life. It is the oldest tradition which works on all aspects of the person: the physical, mental, spiritual, emotional and psychic.

Asana are postures. According to Patanjali, "any comfortable position that is steady is an asana". Asanas have a good influence on our body systems, particularly the respiratory and circulatory the nervous and the endocrine. The main purpose of the asana is to tone up our body systems and grant healthy life to people. It removes all sorts of diseases (N.C.Narayanan, 2002).There will be no life on the earth without the sun, and the Surya Namaskaras or the Sun Salutations, as they are popularly called, are an ancient method of showing gratitude or paying respect

to the sun that is the source of all forms of life on the earth.. The Surya Namaskaras are a complete body workout. Doing 12 sets of this exercise translates into doing **288 powerful yoga asanas in a span of 12 to 15 minutes**. The Surya Namaskaras also form an incredible link between the warming-up poses and the intense yoga asanas. Surya Namaskar, or Sun Salutation, is a Yoga warm up routine based on a sequence of gracefully linked asanas..The nomenclature refers to the symbolism of Sun as the soul and the source of all life. It is relatively a modern practice that developed in the 20th century. Lipids are found in your blood and are stored in tissues. They are an important part of cells, and they help keep your body working normally. Lipid disorders, such as high cholesterol, may lead to life-threatening illnesses, such as coronary artery disease (CAD), heart attack, or stroke. Lipids include cholesterol, triglycerides, high-density lipoprotein (HDL), and low-density lipoprotein (LDL).

Statement of the Problem

The purpose of the study is to investigate the effect of practice of Surya Namaskar of varied intensity and duration on Total Cholesterol level and High Density Lipoprotein of 45-50 age groups.

Hypothesis

It was hypothesized that there would be significant effect of 3 months of practice of Surya Namaskar of varied intensity and duration on Total Cholesterol level and High Density Lipoprotein of 45-50 age groups.

Delimitations

1. The study will be delimited to male sedentary lifestyle peoples of Guwahati.
2. The study will be delimited to age ranging from 35 to 45 years.
3. The study will be restricted to the practice of Surya Namaskar.

Limitations

- ❖ Certain factors like medication, diet, daily routine & habits etc. that might have an effect on the result of the study will be considered as a limitation.
- ❖ Genetic factors might also have an effect.
- ❖ No special motivational technique will be used to encourage the subjects to do their best during the test.

Methodology

Selection of Subject

The present study is undertaken among 20 male sedentary peoples. They were selected randomly from Guwahati city. The age of the selected subjects were between 45 to 50 years. For experimenting on Lipid Profile from varied intensity of Surya namaskar two groups i.e. one experimental group and one control group will be for made. Each group will contain 10 samples. Control group in the experimentation

will take all their daily life style activities as usual while experimental group will additionally go for Yoga (varied intensity Surya namaskar) practice.

Selection of Variables

To order to assess the effect of 3 months of varied intensity and duration of Suryanamaskar on Total Cholesterol level and High density lipoprotein of sedentary people of Guwahati.. Alere Cholestech Lipid Profile Cassettes-10-989-10/ Box are used for testing total cholesterol and high density lipoprotein.

Procedure

The Suryanamaskar practice was given to the subject for 3 months, 3 day in a week for the duration of 45 minutes in morning in the yoga of LNIPE,NERC Guwahati. Variables selected for study was total cholesterol and high density lipoprotein. The data collected twice i.e. prior to start of the training program (pre data) and after the completion of 3 weeks training program (post data). The collected for the study was statistically analysed by employing "t" tset at 0.05 level of significance.

Result

The "t" was applied to find out the significance difference between the pre and post means of the selected variables. The level of significance was chosen to test the hypothesis was 0.05

List of Abbreviations

ABBREVIATIONS	Full form
PRTCG	Pre test of Control Group
PRTEG	Pre test of Experimental Group
POTCG	Post test of Control Group
POTEG	Post test of Experimental Group

The unit of measurement for various parameters was milligram per deciliter (Mg/dL).It is a measurement that indicates the amount of a particular substance in a specific amount blood.

Table 1

Descriptive Analysis of Mean and Standard Deviation of Experimental And Control Group on Total cholesterol Level

Group	Test	Mean	N	Std. Deviation	Std. Error Mean
Experimental Group	Pre Test	220.40	10	15.932	5.038
	Post Test	213.80	10	16.491	5.215
Control Group	Pre Test	211.00	10	14.055	4.445
	Post Test	212.40	10	14.230	4.500

Table -1 reveals that the value of mean and standard deviation of Experimental group before and after training programme were 220.40±15.932, 213.80±16.491 respectively. The mean and standard deviation of control group before and after training programme were 211.00±14.055, 212.40±14.230 respectively. The mean total cholesterol level of Experimental group in their post test is smaller than their pre test where as the mean total cholesterol level of control group in their post test is greater than their pre test. Smaller the mean higher the performance.

Table-2

Paired Samples't' test of Experimental and Control Group On Total Cholesterol Level

Group	Test	Mean	Std. Deviation	Std. Error Mean	T	df	Sig. (2-tailed)
Experimental Group	Pre Test Post Test	6.600	4.971	1.572	4.199	9	.002
Control Group	Pre Test Post Test	-1.400	1.897	.600	-2.33	9	0.45

****>Significant at t(9)0.05/2=1.833***

Table -2 reveals that significant difference was found between the mean score of Experimental group (pre and post) in relation to varied intensity and duration of Suryanamaskar on Total Cholesterol level as the calculated t-value was found 4.199 was higher value than the required value (1.833) at .05 level of significance. (p-value .002). Table -2 also indicates that significant difference was not found between the mean score of control group (pre and post) in relation to varied intensity and duration of Suryanamaskar on blood glucose level as the calculated t-value was found -2.33 which was lower value than the required value (1.833) at .05 level of significance.(p-value o.45).

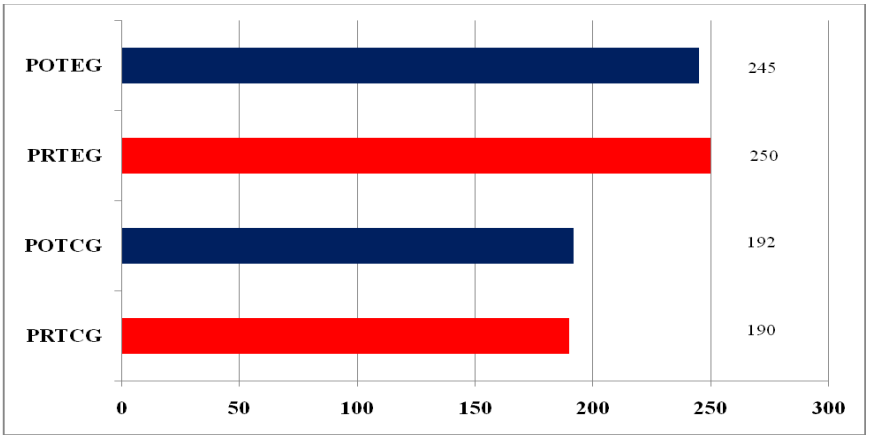

Figure 1 –Graphical repreentation of Pre and Post mean scores of control group and experimental group of Total Cholesterol level

Table 3

Descriptive Analysis of Mean and Standard Deviation of Experimental And Control Group on High Density Lipoprotein Level

Group	Test	Mean	N	Std. Deviation	Std. Error Mean
Experimental Group	Pre Test	65.20	10	15.810	5.000
	Post Test	68.40	10	15.508	4.904
Control Group	Pre Test	51.90	10	9.723	3.075
	Post Test	50.40	10	9.204	2.911

Table -5 reveals that the value of mean and standard deviation of Experimental group before and after training programme were 65.20±15.810, 68.40±15.508 respectively. The mean and standard deviation of control group before and after training programme were 51.90±9.723, 50.40±9.204 respectively. The mean level of Experimental group in their post test is greater than their pre test where as the mean total cholesterol level of control group in their post test is smaller than their pre test. greater the mean higher the performance.

Table-4

Paired Samples't' test of Experimental and Control Group On High Density Lipoprotein Level

Group	Test	Mean	Std. Deviation	Std. Error Mean	T	df	Sig. (2-tailed)
Experimental Group	Pre Test	-3.200	2.251	.712	-4.496	9	.001
	Post Test						
Control Group	Pre Test	1,500	1.716	.543	2.764	9	.022
	Post Test						

****>Significant at t(9)0.05/2=1.833***

Table -6 reveals that significant difference was not found between the mean score of Experimental group (pre and post) in relation to varied intensity and duration of Suryanamaskar on high density lipoprotein level as the calculated t-value was found -4.496 which was lower value than the required value (1.833) at .05 level of significance.(p-value .001)

It indicates that significant difference was found between the mean score of control group (pre and post) in relation to varied intensity and duration of Suryanamaskar on high density lipoprotein level as the calculated t-value was found 2.764 which was higher value than the required value (1.833) at .05 level of significance. (p-value o.22).

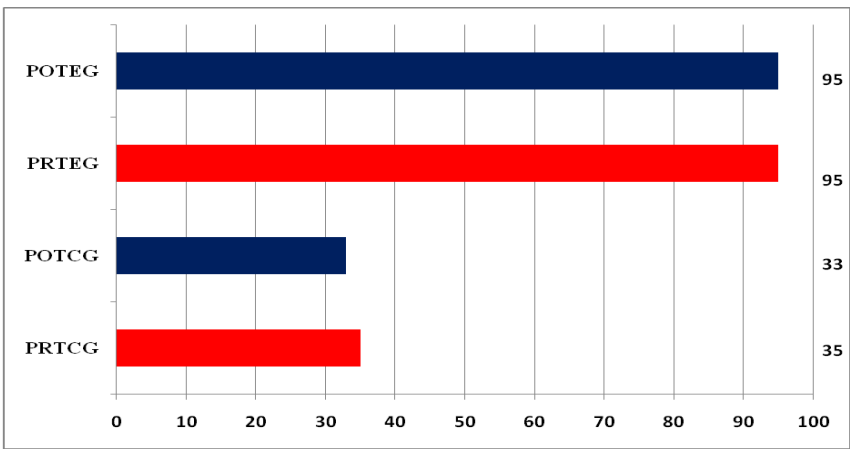

Figure 2 –Graphical repreentation of Pre and Post mean scores of control group and experimental group of high density lipoprotein level

Discussion and Findings

The result of the study indicates that the experimental group namely Surya Namaskar group had significantly effect on the selected dependent parameters namely total cholesterol level and high density lipoprotein, when compared to the control group.

Conclusion

1. There is significant effect of varied intensity and duration of Suryanamaskar on total cholesterol level level of 35-45 age groups after providing 3 training programme.E
2. There is also significant effect of varied intensity and duration of Suryanamaskar on high density lipoprotein, of 35-45 age groups after providing 3 training programme.

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A Kinematic Study of Javelin Throw Technique Performance of Inter College Level Athletes

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Abstract

The purpose of the study was to find out the kinematic analysis of javelin throw with performance; five subjects from track and field match practice group and non-match practice group. All the subjects are studying in Lakshmibai National Institute of Physical Education, Guwahati. The subjects were ranging from 1 7-25 years of age. The study was conducted under controlled condition. Digital Videography technique was employed for conducting the kinematic analysis of javelin throw with performance. The videography was done at moment of release of the javelin in sagittal plane. From the photograph, the stick figures were prepared by using kinovea software and various kinematic variables were obtained at the moment of release and the angles and center of gravity were found out by using the kinovea software. The criterion measure was performance of subjects in javelin throw. The selected biomechanical variables were: angle of wrist, elbow, shoulder, hip, knee, ankle and CG

Product moment correlations were calculated by the selected kinematic variables with the performance of javelin throw. The level of significant chosen was, 05. The Angle of shoulder (R) and CG have shows the significant value of coefficients of correlations. However in case of other variables that is at Angle of wrist (R), Angle of wrist (L), Angle of Elbow (R), Angle of Elbow (L), Ante of Shoulder (L), Angle of Hip (R), Angle of Hip (L), Angle of Knee (R), Angle of knee (L), Angle of Ankle (R), Angle of Ankle (L) of the subjects shown insignificance value of coefficients of correlation were obtain.

Keyword: Kinematic analysis, Javelin throw, Kinovea

Introduction

Biomechanics is the science concerned with the internal and external forces acting on the Human body and the effects produced by these forces. Biomechanics is an applied form of Mechanics and consequently the method used to investigate.

However, biomechanics have not developed in the wake of mechanics but as bordering science in other scientific Discipline such as anatomy, physiology and technique of Sports.

Analysis involves breaking something into smaller parts and then examining those parts. Biomechanics research at the practical, fundamental and theoretical levels has increased markedly in recent years. As this work become more complex and sophisticated, it is necessary for researchers to improve their instrumentation system, experimental procedures, data recording, analysis methods and means of disseminating their findings. The ultimate success of biomechanics research in sport will depend greatly upon the creativity and competence of the researchers in their continual efforts to strive for more etftctive means of investigating human movement.

Videography is the process of capturing images on a videotape or directly to a computer, also used to include the later. A great strength of videography is that it enables the investigator to record sports movement not only in a controlled laboratory setting, but also in competition. It also minimizes any possible interference with the performer. Video analysis is the process of filming human movement, importing the footage to a computer and then analyzing performance using custom-designed computer software program.

The javelin throw is a track and field event where the javelin, a hollow rod like structure about 2. 5cm (8 ft. 2 in) in length, is thrown. The javelin thrower gains momentum by running within a predetermined area. Javelin throwing is an event of both the men's decathlon and the women's heptathlon. Javelin throwing is a highly technical event and requires perfect coordination of multiple joints in different planes of motion. The motor sport objective of javelin throwing is to attain the greatest throwing distance · one can build up force in the run, In the hop, and in the arm swing, but loose the effect of these if the final force is not directed exactly in the line of intended flight. The Javelin throw is an event which places both physical and technical demands on the athletes. The distance of the javelin throw mainly depends initial velocity and angle of release it is calculated using the following formula: $S= V2*\sin^2$

If the force is not directed truly, the javelin tends to vibrate in flight. As a result it will fall far short of the distance of several forces, the angle of flight is important approximately a 45 degree angle will give the longest distance. But the most important and controllable factors are javelin release speed and release angle. The athlete tries to achieve this objective, which is generally called the "maximization of throwing distance", via the following throwing elements, approach run, release, braking (final phase) and the flight of the javelin.

Angle of Release

The second important parameter is the angle at which the javelin is thrown. The best angle of release for a javelin is between 32° and 36 °, but this is tough to achieve consistently. The flight path and distance of the javelin depends on the angle of attack, which is the difference between the Angle of altitude: The orientation of the javelin on the ground Angle of the velocity vector: the flight path of the javelin's center of mass (not the tip). The ideal angle of attack is zero degrees.

If the angle of attitude is larger than the angle of velocity vector, the javelin won't travel in the most aerodynamic way. Its increased surface area will slow it down and decrease the throw length, especially in a headwind. A common cue from coaches is to "throw through the tip" to help throwers control the release angle of the javelin. Often, the best thrower is the one who is able to control the angle of release with the prevailing wind.

Materials and Methods

Participants

For the purpose of the study (5) male inter-college level javelin throwers 17-to 25 years were selected as subjects for the present study. As the subjects had been previously trained on the basis of that training data was collected. Therefore, it is assumed that they possess a good level of releasing technique. The purpose of the study was explained to all the subjects and subjects were motivated to put their best during each trail.

Statistical Analysis

To find out the relationship of selected kinematic variables and performance of javelin throw at the time of release (Release) was calculated by using Pearson's product moment correlation. For testing the hypothesis the level of significance was set at 0. 05.

Instruments

Kinematical analysis demands specific tools and equipment to capture and analyze the data. The experimental apparatus used in this research work is iPhone x. Kinovea software (motion analysis software) and computer system.

Results

In order to ascertain the linear kinematic and angular kinematic variables namely angle at Angle of wrist (R), Angle of wrist (L), Angle of Elbow (R), Angle of Elbow (L), Angle of Shoulder (R), Angle of Shoulder (L), Angle of Ankle (L), Angle of Hip (L). Angle of height of center of gravity at the moment of release in javelin throw. Pearson correlation coefficient was calculated and result are presented in table 1.

TABLE 1

Relationship of selected Kinematic variable to the performance in javelin throw Technique (N = 5)

S.NO.	Variables	Co-efficient of correlation 'r'
1.	Height of C.G	0.88*
2.	Angle of wrist (R)	-0.76
3.	Angle of wrist (L)	-0.18
4.	Angle of elbow (R)	-0.64
5.	Angle of elbow (L)	0.55
6.	Angle of shoulder (R)	-0.95*
7.	Angle of shoulder (L)	0.34
8.	Angle of hip (R)	0.27
9.	Angle of hip (L)	-0.73
10.	Angle of knee (R)	-0.31
11.	Angle of knee (L)	-0.75
12.	Angle of ankle (R)	0.77
13.	Angle of ankle (L)	-0.16

N=5

Level of significance=0.05

Table of 0.05(3) =0.87

The table indicated that the kinematic variable namely Angle of shoulder (R). And CG have shown the significant value of coefficients of Correlations the performance in javelin throw. However in case of other variables that is at Angle of wrist (R), Angle of wrist (L), Angle of Elbow (R), Angle of Elbow (L), Angle of Shoulder(R), Angle of Shoulder (L), Angle of Hip (R), Angle of hip (L), Angle of Knee (R), Angle of Knee (L), Angle of Ankle (R), Angle of Ankle (L) of the subjects are not sound highly correlated.

Discussion

Significant relationship were found in angle of Shoulder (R) and CG with the performance of the subjects in javelin throw, which indicate that the contribution of these variables to the performance in javelin was more than other selected variables. The insignificant values of coefficient of correlation or low correlation shown by most of the variables does not mean that those variable do not contribute to the performance. They might have contributed to the performance, but the insignificant value of correlation of such variables with performance might been due to the small sample size and non-availability of sophisticated recording techniques. As the results show that a significant relationship exists between performance in javelin throw and certain biomechanical variables, whereas other variables have shown insignificant relationship with the performance of subjects

in javelin throw, therefore the hypothesis as stated earlier that there may not be any significant relationship between selected biomechanics variables with the performance e of athletes in javelin is partially rejected.

Conclusion

The Angle of Shoulder (R) and CG have shown the significant value of coefficients of correlation's. The Angle of wrist (R), Angle of wrist (L), Angle of Elbow (R), Angle of Elbow (L), Angle of Shoulder (L) Angle of Hip (R), Hip (L) Angle of Knee (R), Angle of Knee (L), Angle of Ankle(R). Angle of Ankle (L) of the subjects shown insignificance relationships with the performance of throwing the javelin.

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Comparative Study on Vital Capacity and Resting Heart Rate Between Badminton and Table Tennis Players of Manipur

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Abstract

The purpose of this study was to Comparative Study on Vital Capacity and Resting Heart Rate between Badminton and Table Tennis Players of Manipur. In this study, we are comparative difference of Vital Capacity and resting heart rate between badminton and table tennis players of Manipur. In this study fifteen (15) male players were selected from each game i.e. Badminton and Table Tennis Players of the Manipur, the subjects aged were ranged between 18-25 years who have participated at least Inter-college and state level competitions. Vital capacity was measured by using spirometer and resting heart rate was measured by using pulpatory method. For statistical analysis Independent t-test were employed. Analysis and interpretation are carried out by using IBM- SPSS Version16.Based on the result it was concluded that there was insignificant different found in resting heart rate whereas a significant different found in vital capacity between badminton and table tennis players of Manipur .

Keywords: Vital capacity, Resting heart rate, Badminton, Table Tennis, Dry- Spirometer.

Introduction

Physiological exercise testing is important in racket game to help identify potential talent but also to provide the players, trainers and coaching staff with some profiles for the players and a measure for evaluating training programs. Testing physiological requirements for racket game has become more specific over the past decade with further advances in both sports science technology and general understanding of the physiological requirements for testing racket game. However despite this progress in testing procedures and knowledge there still appears limited research regarding the analysis and critical appraisal of tests used specifically for racket sports.

Badminton is one of the most popular team based sports played and watched throughout the world. It is played by both males and females of all ages and fitness levels. Badminton long term training will enable the heart beat is strong; vital capacity increased and improved durability.

Table tennis, also known as ping pong, table tennis competitors play one of the fastest ball games in the world and their performance is the result of a complex myriad of factors. Play is fast and demands quick reactions.

One of the best general tactics we can use is to play to your own strengths and try to impose your game on your opponent. This means that you need to try to implement tactics which make use of your strengths.

Vital Capacity (VC) is the greatest volume of gas that, following maximum inhalation, can be expelled during a complete, show, forced exhalation; equal to Inspiratory capacity plus expiratory reserved volume. More lung capacity ensures more supply of the oxygen to the active body parts which is turn results in an enhanced physical endeavor and work force.

Resting Heart rate: According to the National Institute of Health, the average resting heart rate: for children 10 years and older, and adults (including seniors) is 60-100 beats per minute and for well-trained athletes is 40-60 beats per minute.

Objective of the Study

The purpose of the study was to compare the Vital Capacity and Resting Heart Rate between Badminton and Table Tennis Players of Manipur.

Methodology

For the present study the sample consisted of 30 Male players (15 male players from each game i.e. Badminton and Table Tennis) Players of the Manipur. The age of subject was ranged between 18-25 years. The selected physiological variables were Vital Capacity and Resting Heart Rate.

1. Vital Capacity

- **Objective :** To measure the Vital capacity.
- **Facilities and Equipment:** Dry - Spirometer, handkerchief and proper place.
- **Procedure :** The Dry - Spirometer was set up in proper position with subjects. The subjects were asked to do the maximum inhalation as deeply as possible with nasal airway closed and maximum exhalation as forcefully as possible all the air through the Spirometer. Each subject was given 3 (three) trails.
- **Scoring:** The score was recorded as denoted by the indicator to the leading dial in liters. The highest one out of 3(three) trails was recorded as score of subjects.

2. Resting Heart Rate

- **Objective:** To measure the Resting Heart Rate.
- **Facilities & Equipment:** Stopwatch and comfortable place.
- **Procedure:** The resting heart rate of each subject was recorded between 6.00 am to 7.00 am. Before recording the heart rate the subjects were instructed to remain in relaxing/easy sitting position. Pulse was counted by using the Pulpatory method on the wrist of the subject. Three (3) trails of pulse count were recorded for 20sec, 30sec, and 1minute.
- **Scoring:** The lowest or the best of 3 trails was recorded as the heart rate score of the subject.

Statistical Analysis

The data analyzed and compared with the help of statistical procedure in which Mean, Standard Deviation (SD), Standard Error of Mean (SEM) and t-test used to compare the data of selected physiological Variables between Badminton and Table Tennis Players. The level of significance was set at $p<0.05$ level of confidence.

Result

Table 1

Significance Mean different of Vital Capacity between Badminton and Table Tennis Players

	N	Mean	Σ	SEM	Df	t-value
Badminton	15	6.38	43.45	11.22	28	3.89*
Table Tennis	15	5.63	60.99	15.75		

Significance at 0.05

't'.05 (28) = 1.70

The table -1 shows that mean value and standard deviation value on Vital Capacity of Badminton were 6.38 and 43.45 and 5.63 and 60.99 for Table Tennis respectively. Therefore, it indicates that there was significant different between Badminton and Table Tennis Players as the calculated t-value was 3.89 as obtained and the tabulated t-value was 1.70 which was 28 degree of freedom at 0.05 level of significance. The graphical representation of Badminton and Table Tennis Players mean differences for Vital Capacity was showed at figure-1

Figure 1. Mean difference of Vital Capacity between Badminton and Table Tennis Players

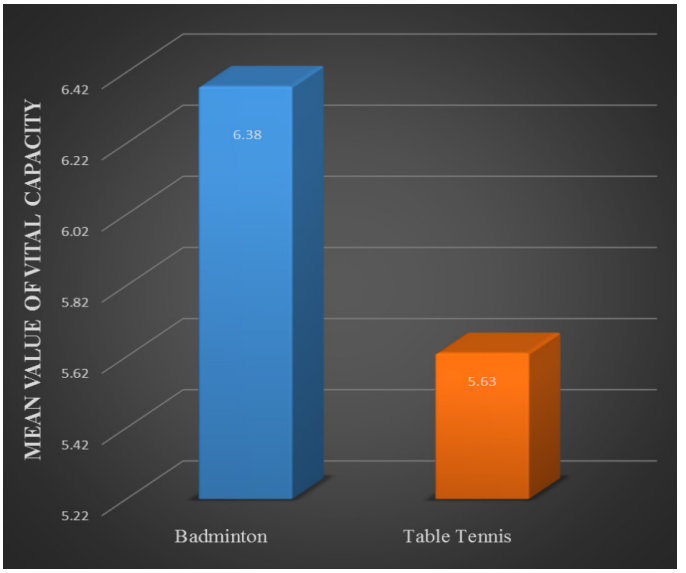


Table 2

Significance Mean different of Resting Heart Rate between Badminton and Table Tennis Players

Group	N	Mean	Σ	SEM	Df	t-value
Badminton	15	63	5.66	1.46	28	0.124
Table Tennis	15	63.33	8.70	2.24		

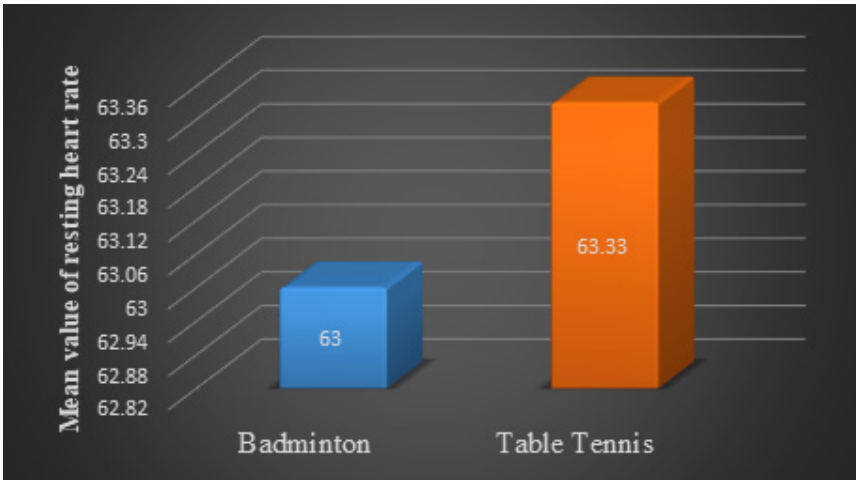
****Significance at 0.05***

't'.05 (28) = 1.70

The table -2 shows that mean value and standard deviation value on Resting Heart rate of Badminton were 63.00 and 5.66 and 63.33 and 8.70 for Table Tennis respectively. Therefore, it indicates that there was no significant difference between Badminton and Table Tennis players as the calculated t-value was 0.12 as obtained and the tabulated t-value was 1.70 which was 28 degree of freedom at 0.05 level of significance.

The graphical representation of Badminton and Table Tennis Players mean differences for Resting Heart Rate was showed at figure-2.

Figure 2. Mean difference of Resting Heart Rate between Badminton and Table Tennis Players



Discussion

In the Vital Capacity there was significant different observed between Badminton and Table Tennis players in the mean value i.e. 6.38 and 5.62 respectively. The significant found might be due to some factors like longer duration of play in badminton comparing with table tennis, more playing space covered in badminton than table tennis. Whereas in the Resting Heart Rate there was insignificant different found between Badminton and table Tennis player in the mean value i.e. 63.00 and 63.33 respectively. The insignificant difference found might be due to the nature of game of movement are similar between badminton and table tennis players. Moreover, in almost all the games and sports where vigorous physical activities are required the recovery period is always quicker hence the resting heart rate is more or less similar.

Conclusions

- In the light of the findings and limitations of the present study the following conclusions were dawn:
- There was significant difference obtained in the Vital Capacity between badminton and table tennis players of Manipur.
- There was insignificant difference obtained in the Resting Heart Rate between badminton and table tennis players of Manipur.

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Yoga Improving Health Related Physical Fitness

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Abstract

The purpose of the study was improving health related physical fitness (Cardiorespiratory, Muscular strength and endurance Flexibility Body composition) is the biggest problem of our modern society. As well as all their problems can be solved by yoga. Types of yoga (Hatha Yoga,Vinyasa, Ashtanga, Power Yoga, Hot Yoga, Restorative Yoga) which increase health and fitness of individual and society in the modern age. With the life can be lived in better way. Due to its importance it is recommended to upilize in life.

Keywords: Health related fitness, Hatha Yoga,Vinyasa, Ashtanga, Power Yoga, Hot Yoga, Restorative Yoga

Introduction

Health-related physical fitness is all about improving quality of life leaning towards Cardiorespiratory fitness Muscular strength and endurance Flexibility Body composition; all work well together. This means increased energy levels, a stronger respiratory system, and an optimized percentage of body fat against lean body mass. The key to achieving physical fitness for health reasons means focusing on each health related physical fitness component mentioned above when exercising. Some exercise can potentially address all five components however a mix of exercises is suggested in order to best address each component. The average person needs regular physical activity simply because the human body was designed to move. To keep it healthy, you need to move. Health related physical fitness means that you choose a variety of activities to benefit your body and your mind.

Yoga is the oldest system of personal development encompassing body, mind, and spirit. The word yoga, from the word “yuj” (Sanskrit, “to yoke” or “to unite”), refers to spiritual practices that are essential to the understanding and practice of Hinduism. Yoga and yogic practices date back more than 5,000 years — the Indus Valley seals depict a number of figures in postures identical to various asanas.

The term covers a wide array of practices, embodied in eight "limbs," which range from ethical and moral guidelines to meditation on the Ultimate Reality. Yoga is a combination of both physical and spiritual exercises, entails mastery over the body, mind and emotional self, and transcendence of desire. The ultimate goal is moksha, the attainment of liberation from worldly suffering and the cycle of birth and rebirth.

Today yoga being a subject of varied interests, has gained worlds wide popularity. Yoga is traditionally believed to have beneficial effects on physical and emotional health. The overall performance is known to be improved by practicing yoga techniques and their effects on physical functions. Yoga practices can also be used as psycho-physiological stimuli to increase the secretion of melatonin which, in turn, might be responsible for perceived well-being. Yoga may be as effective as or better than exercise at improving a variety of health-related outcome measures and as a result this study was undertaken to find out the yoga training on health related physical fitness variables.

Health Related Physical Fitness

Health-Related Fitness involves exercise activities that you do in order to try to improve your physical health and stay healthy, particularly in the categories of cardiovascular endurance, muscular strength, muscular endurance, flexibility and body composition.

Cardiovascular fitness is the ability of the heart (cardio) and circulatory system (vascular) to supply oxygen to muscles for an extended period of time. Cardiovascular is also called cardiorespiratory (lungs) fitness.

Muscular strength and endurance is the muscle's ability to produce effort or perform work.

- Muscular endurance refers to the ability of the muscle to work over an extended period of time without fatigue.
- Muscular strength refers to the maximum amount of force a muscle can exert against an opposing force.

Flexibility is the ability to move a body part through a full range of motion at a joint (ROM).

Body composition is the ratio of body fat to lean body mass (including water, bone, muscle, and connective tissue). Having too much fat tissue is a risk factor for cardiovascular diseases, diabetes, cancer, and arthritis.

Yoga Fitness

Yoga fitness is the result of constant practice of Yoga in all its forms. These are physical and mental and include Yoga poses, breathing exercises and meditation. Yoga is the oldest form of physical and mental development that includes the body, mind, and spirit.

Modern Types of Yoga

1. Hatha Yoga
2. Vinyasa
3. Ashtanga
4. Power Yoga
5. Hot Yoga
6. Restorative Yoga

Hatha Yoga

- ❖ Yoga as we know it in the Western world is based on the practice of Hatha yoga, which uses different postures to prepare your body for meditation and reach an enhanced state of enlightenment.
- ❖ Hatha yoga classes are typically suitable for all levels and focus on proper a lignment.
- ❖ Hatha classes may also incorporate the use of props, such as straps or blocks, to help you safely access postures.

Vinyasa

- ❖ A vinyasa class is one that uses a sequence of postures, or asanas, to build heat in your body and help eliminate toxins.
- ❖ Vinyasa yoga, also often referred to as Vinyasa Flow, is typically fast-paced.
- ❖ Previous yoga experience is recommended but not necessarily required.

Ashtanga

- ❖ Ashtanga yoga refers to a type of Vinyasa class that promotes internal cleansing through a vigorous physical practice and synchronized breathwork.
- ❖ According to the Ashtanga Yoga Research Institute, Ashtanga yoga is effective in building strength, improving circulation and removing toxins from your internal organs.

Power Yoga

- ❖ Power yoga was originally developed to make the practice of Ashtanga yoga more accessible to Westerners.
- ❖ "Most people wouldn't take a class called Ashtanga Yoga, because they had no idea what it meant," says Beryl Bender Birch, author of "Power Yoga." "Power Yoga, on the other hand, was something Americans could relate to and know that they'd get a good workout."
- ❖ Like Ashtanga, Power yoga emphasizes strength and endurance through a vigorous series of asanas.
- ❖ Unlike Ashtanga, however, postures are performed in no particular order. In

Power yoga, there is less emphasis on the subtleties of each posture.

Hot Yoga

- Many yoga studios offer hot yoga classes, which are held in a heated room to promote increased flexibility.

Restorative Yoga

- Restorative yoga uses props such as blankets or blocks to create soothing, well-supported postures that are held for several minutes.
- Classes are concluded with a lengthy corpse pose--up to 20 minutes--to promote a deep state of relaxation.
- According to Yoga Journal, Restorative yoga can help give you relief from insomnia, asthma, migraines and chronic pain.

Yoga Effect for Health Related Physical Fitness

Cardio Respiratory Benefits

- Power yoga, Ashtanga and flow styles of yoga follow a format that encourages you to work hard enough to raise your heart to meet cardiovascular improvement standards.
- These styles move from one pose to the next quick quickly, keeping you moving like you would do in any fitness class.
- Because yoga classes are typically 60 to 90 minutes long just 2-3 classes a week will meet the physical activity guidelines for improving your fitness set by the U.S. Department of Health and Human Services.

Muscular Benefits (Strength and Endurance)

- Yoga requires you to get into and hold positions that will naturally strengthen your muscles, using only your bodyweight for resistance. This is a very unique approach because as you do more yoga, your body weight should naturally decrease which logic would say should make the poses more easy to complete.

Every yoga pose will provide you with strength if you perform them with regularity, but try the plank, bakasana, and various headstands if you particularly want to focus on strength.

Yoga builds your muscular endurance in a systematic, gentle controlled manner. Regular practice of yoga asanas or poses improves the muscle endurance and strength. Yoga asanas or poses are exercises and like any other exercise form they help to tone and strengthen the body and improve muscle endurance and strength. The practice of yoga poses is started by stretching, expanding and softening the inner body in order to become strong rather than becoming tough or hard. Most of the poses are muscular endurance exercises.

Body Composition

- ❖ Vinyasa classes with plenty of movement offer the greatest potential for burning calories.
- ❖ The greater benefit of yoga is that is also helps you clear your mind and become more aware of the choices you make off the yoga mat. o To best use yoga as a way to improve your fitness, you must consider which of these components you want to focus on and choose a yoga class to fit that goal.

Recommendation and Further Suggestions

- ❖ Yoga for fitness increases in popularity as more people than ever enjoy yoga. Most health clubs and gyms offer some type of yoga class because it's generally accepted as a way to improve flexibility and to reduce stress.
- ❖ There are many types of yoga classes to choose from, however, and you should choose one that meets your fitness goals.
- ❖ According to yoga philosophy, a healthy spine creates balance and is a conduit to a sound mind. Yoga is designed to stimulate the nerves running along the spine.
- ❖ Poses involving twists and upside-down positions are especially effective for this purpose. When you practice all categories of yoga poses-seated, standing, lying down on your stomach or back, and upside down-you cause each vertebra (bony segment of the spine) to be slightly separated from the ones above and below it.
- ❖ Creating space between the vertebrae serves to 'plump' the disks between them, allowing energy to flow freely to the brain and giving the blood a clear passageway to circulate in a healthy manner.
- ❖ Internal organs are growing and changing during this period and can become upset with diet changes or over stimulation of nerves.
- ❖ Yoga helps to keep organs healthy despite everyday stresses. It also assists in balancing out the mood swings and eliminating the body aches resulting from the hormonal imbalances experienced during sexual maturing.
- ❖ During this growth period, yoga is useful in easing the tension of tight muscles, tendons, and ligaments, and it can also help to strengthen bones. Certain poses alleviate menstrual cramps (hooray!), and others work internally on clearing energy blocks that may cause headaches, sinus problems, irritability or digestive problems.

Yoga promotes unification of body and mind, and as you practice, it will increase your awareness and your ability to look within, think for yourself, and trust yourself.

The result is that you will feel more peaceful and self-confident during a period of rapid change and be able to engage the world with a more positive outlook.

In yoga philosophy, the body is considered a temple to be treated with respect,

understanding, and acceptance; but dealing with the rapid physical changes of adolescence can be difficult at times. For instance, as girls undergo hormonal changes and begin to experience the internal cleansing process of the menstrual cycle, keeping the body clean and free of odor is very important. As boys undergo the hormonal changes leading to manhood, they often experience glandular secretions resulting in sweaty feet and underarms, which also require regular cleansing.

Frequent cleansing is necessary to keep the pores open so that the skin is able to release toxins freely. Bathing before practicing yoga enhances the capacity of the pores to open and expel toxins and excess oil through sweat glands. Yoga deep breathing exercises promote the process of internal cleansing by improving circulation. An added benefit of yoga practice is the release of negative energy, which can block nadis (energy channels), glands, and pores.

Conclusion

Yoga and health related physical fitness is an integral part of our lifestyle. It removes the impurities from the level of mind, health fitness and unites everything with the spirit. Modern Yoga exercises to improve physical fitness and strengthen the muscles of the body of all the various benefits of yoga are not limited to this only, but also to work to improve and develop the various components of the body. We Recommendations with Use Modern Yoga exercises because of its clear and positive impact on improving the health-related physical fitness variables.

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Exploring the Effects of Gentle Aerobic Exercise on Breath-Holding Abilities in Young Men

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Abstract:
This study looked at the effects of a 10-week light aerobic exercise program on breath-holding ability in young males aged 16 to 22 years. Forty individuals were separated into two groups: experimental and control, with the experimental group undergoing ergometer training three times each week. The study found substantial increases in breath-holding capacity for both age groups, with 22-year-olds demonstrating more consistent gains (t-ratio: 31.952, $p<0.05$) than 16-year-olds (t-ratio: 19.913, $p<0.05$). The findings show that even moderate aerobic exercise can improve respiratory efficiency in young individuals, implying potential uses for fitness programs and health therapies aimed at this age.
Keywords:
aerobic exercise, breath-holding capacity, respiratory function, young people, ergometer training, physical fitness, adolescent health, exercise physiology, cardiopulmonary adaptability.

1. INTRODUCTION

The significance of physical fitness has been a constant thread woven throughout human history, from our earliest ancestors who relied on their physical prowess for survival to modern-day fitness enthusiasts. As Eaton, Shostak, and Konner (1988) astutely observed in their seminal work "The Paleolithic Prescription," our early human activities involved substantial physical exertion, which naturally maintained our ancestors' fitness levels. This evolutionary perspective underscores the intrinsic link between physical activity and human health.

In contemporary society, we have developed structured approaches to maintain and enhance our physical fitness, with aerobic exercise emerging as a cornerstone for promoting cardiovascular and respiratory health. The American Heart Association (2018) emphasizes the importance of regular aerobic activity for maintaining heart health and overall well-being. This form of exercise, characterized by sustained rhythmic movements that engage large muscle groups, has been shown to improve lung function, enhance oxygen utilization, and boost overall endurance (Patel et al., 2017).

An intriguing method to assess respiratory system efficiency is through the measurement of breath-holding capacity. This simple yet informative test provides insights into how effectively the body utilizes oxygen and manages carbon dioxide levels. As noted by Ferretti (2001) in his comprehensive review of breath-holding physiology, this capacity is influenced by various factors, including lung volume, blood oxygen stores, and the individual's tolerance to rising CO2 levels.

The period between late adolescence and early adulthood, specifically the age range of 16 to 22 years, represents a critical phase in human development. During this time, physiological systems, including the respiratory and cardiovascular systems, continue to mature and adapt to environmental stimuli (Steinberg, 2014). This developmental stage offers a unique window to examine how targeted interventions, such as aerobic exercise, might influence physiological parameters like breath-holding capacity.

Our study aims to investigate the potential effects of a moderate aerobic exercise regimen on the breath-holding capacity of young men within this age bracket. By focusing on this specific demographic and utilizing a gentle exercise routine, we hope to shed light on how even modest levels of aerobic activity might impact respiratory efficiency. This research not only contributes to our understanding of exercise physiology in young adults but also has potential implications for developing targeted fitness programs and respiratory health interventions for this age group.

2. Methods

Our Volunteers

We were fortunate to have 40 young men from Shyam Lal College and BR Ambedkar College, Delhi join our study. We randomly assigned them to three groups: two that would follow our exercise plan, and one that would continue with their normal routines.

The Exercise Plan

For those in the exercise groups, we designed a gentle aerobic routine. They met three times a week (Mondays, Wednesdays, and Fridays) for 10 weeks. Each session lasted an hour, bright and early from 6:30 to 7:30 in the morning. The routine involved exercises on an ergometer, a type of stationary bicycle. Meanwhile, those in the control group simply continued their usual daily activities.

Here's a quick look at the schedule:

Day	Time	Warm-up	Experimental Group Activity	Control Group Activity
Monday	6:30 am to 7:30 am	10 min light jogging	Ergometer training	Regular routine
Wednesday	6:30 am to 7:30 am	10 min light jogging	Ergometer training	Regular routine
Friday	6:30 am to 7:30 am	10 min light jogging	Ergometer training	Regular routine

3. Measuring Progress

To track improvements, we conducted breath-holding tests at the beginning and end of the 10-week period. We simply measured how long each participant could hold their breath, recording the time in seconds. Then, we crunched the numbers using statistical methods to compare the exercise groups with the control group.

4. Results

The 16-Year-Olds

The younger group showed impressive gains after the 10-week program. Here's what we found:

Group	Mean Pre-test (seconds)	Mean Post-test (seconds)	T-ratio	p-value
Experimental Group (A1)	42.80 ± 4.54	49.80 ± 5.88	19.913	0.000
Control Group (A)	42.40 ± 1.43	43.00 ± 1.49	-	-

The t-ratio of 19.913 ($p < 0.05$) tells us that the difference between the exercise and control groups is statistically significant. In other words, the improvement we see in the exercise group is likely due to the aerobic training and not just chance.

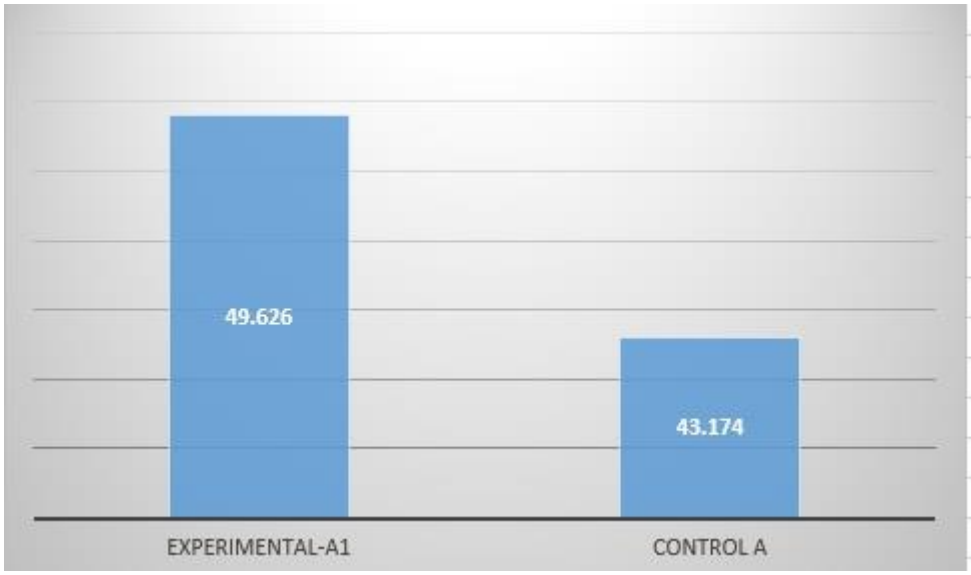

Figure 1: Graphical representation of breath-holding capacity for 16-year-old males in Experimental Group A1 and Control Group A.

The 22-Year-Olds

The older group also showed significant improvement:

Group	Mean Pre-test (seconds)	Mean Post-test (seconds)	T-ratio	p-value
Experimental Group (B1)	43.00 ± 1.33	48.50 ± 2.95	31.952	0.000
Control Group (B)	42.10 ± 1.60	42.20 ± 1.23	-	-

With an F-ratio of 31.952 ($p < 0.05$), the improvement in the 22-year-old exercise group is even more pronounced than in the younger group.

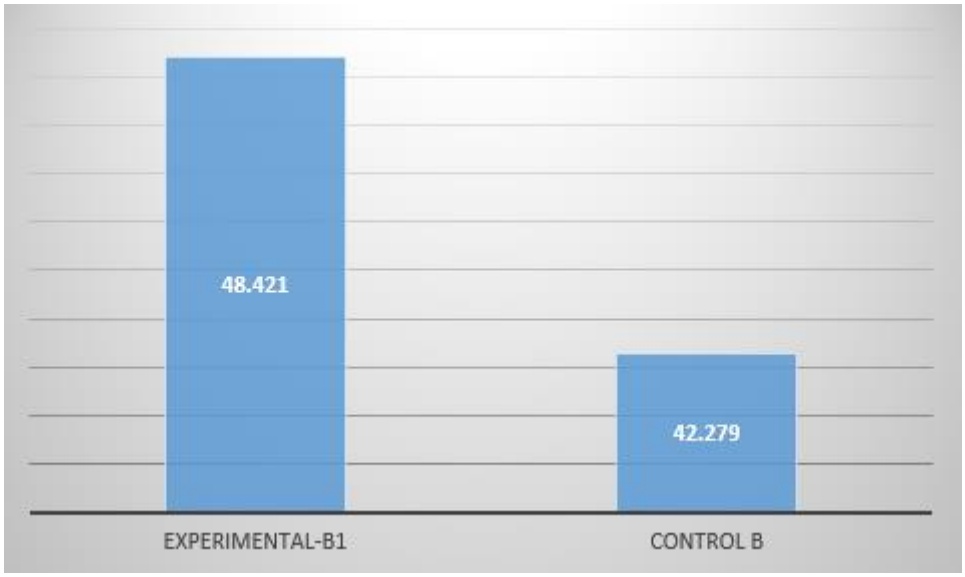

Figure 2: Graphical representation of breath-holding capacity for 22-year-old males in Experimental Group B1 and Control Group B.

5. **Discussion**

One of the best ways to tell if your lungs are healthy is if you can hold your breath. This is directly linked to your overall blood health. The fact that both age groups improved their ability to hold their breath significantly after a simple aerobic exercise plan shows how important regular exercise is for lung health. The results of this study agree with those of other research on exercise mechanics and breathing adaptation.

The improvements we saw in the study were caused by a number of physiological processes. To begin, doing physical exercise regularly makes the body use air more efficiently. According to Powers and Howley (2018), doing aerobic exercise regularly makes mitochondrial density and capillarization higher in skeletal muscles. This makes it easier for the body to take in and use oxygen. This better use of air probably helps explain why our subjects were able to hold their breath longer.

Strengthening the breathing muscles, especially the diaphragm and intercostal muscles, is also very important for these improvements. According to Enright et al. (2006), exercising the respiratory muscles made them much stronger and longer-lasting, which led to better lung performance. Our research shows that even mild aerobic exercise may be enough to strengthen these muscles, which will make it easier to hold your breath.

A fascinating part of our study is how the results were not always the same in the 16-year-old group, while they were more consistent with changes in the 22-year-old group. This gap may have something to do with the fact that bodies are still growing in late childhood. In his 2014 study on adolescent growth, Steinberg points out that the rates at which teens physically mature vary a lot during that time. The benefits that were more constant in the 22-year-old group are probably because they are closer to fully developing physically, which makes their reactions to the exercise intervention more consistent.

Our results add to and support Shaer's (1981) important study, which showed that regular aerobic exercise is good for improving lung function and breathing efficiency. Newer studies have shed more light on how these gains happen. For instance, Radak et al. (2016) discovered that regular exercise leads to adaptive responses in the lungs, such as higher antioxidant levels and lower inflammatory reactions. These may help the general health and function of the lungs.

Our results are important for many reasons, not just bodily ones. McArdle et al. (2015) say that better lung function is linked to more exercise and a better quality of life in general. Regular, even light physical exercise can make a big difference in how well your lungs work. This means that these kinds of treatments may be especially helpful for people who can't handle a lot of exercise or who are just starting to get fit.

Additionally, the age-related benefits we discovered in our research make it even more important to give each person their own workout plans. According to Willmore et al. (2008), workout plans should be made to fit the person's body and stage of growth. Based on what we found, younger people may need more varied or flexible exercise plans to keep up with their ongoing physical growth.

Finally, our results strongly suggest that light aerobic exercise raises breath-holding ability, a measure of lung health. These improvements, which are in line with previous research, show how important daily exercise is for better lung function. The changes in reactions between age groups give us useful information for future research and real-world uses in exercise recommendations and treatments for lung health.

6. Conclusion

People ages 16 to 22 who did our light physical training program improved their ability to hold their breath significantly after 10 weeks. These results strongly support our original idea that regular, moderate aerobic exercise might help young adults' lung capacity and heart health as a whole. Gains seen in both age groups show that the breathing system can change and adapt during this crucial stage of growth.

These results will have a lot of effects. Before anything else, they stress how low-intensity, easy-to-do types of exercise can cause big changes in the body. Nowadays, when young people are more likely to be inactive, this is particularly good news. For example, doing light physical exercises can improve breathing. This suggests that the level of benefit for health may be lower than was thought before. This could make exercise treatments easier for more people to receive and keep up.

In addition, being able to hold your breath longer can be a sign of better oxygen use and CO2 endurance, which suggests that there may be benefits beyond lung function. These changes may lead to more exercise, better stress control, and better health in general. Therefore, our results show that young people should make regular exercise a part of their daily lives, not only for short-term health benefits but also as a foundation for lifelong health.

The results of the study also make it possible to do more research in the future. One interesting direction would be to see if the gains can be seen in people of all ages, from children to the old. This could tell us something useful about how the respiratory system changes with age in response to physical activity. Also, looking into how different types of exercise, like high-intensity sprint training, strength training, or specific respiratory muscle training, affect the ability to hold your breath could help find the best ways to improve breathing.

Another important question for future study is how long these changes will last. Finding out how long these gains last after the training program is over could help doctors come up with the right exercise plans. Additionally, continuous studies that track people over time may help us understand if starting these kinds of exercise programs early has long-term benefits for our lungs and overall health.

Our findings could be used for more than just individual health effects. They could help make exercise programs, fitness programs at work, and public health efforts more effective in schools and other places. Our research proves that light aerobic exercise can improve pulmonary function, which is a good basis for pushing easy-to-achieve exercise programs that could have big health benefits for many people.

Finally, our research strongly suggests that young guys aged 16 to 22 can greatly improve their ability to hold their breath after 10 weeks of light aerobic activity. In late youth and early adulthood, these results show how amazingly flexible the respiratory system is in response to modest exercise. As we continue to deal with the problems of idleness and its negative effects on health, our results suggest a way to help. That being said, they stress that even mild, long-term exercise can improve breathing, which could lead to better general health for these teens and young adults as they grow up. Moving forward, it is important that we keep researching and learning more about how exercise affects lung health so that we can turn these results into useful, long-lasting ways to improve health.

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