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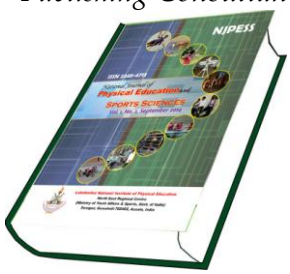

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NORTH EAST REGIONAL CENTER-Guwahati
LNIPE, Sonapur, Guwahati, Assam-782402 (INDIA)
Tel: +91-8811018526 (M)
Editioral Board: publication@lnipeassam.edu.in
Editor-in-Chief: publication@lnipeassam.edu.in

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Editorial

Epicenter Voyage of a Myth Institute-Lakshmibai National Institute of Physical Education
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Lakshmibai National Institute of Physical Education, NERCis amongst the most admired centers of world-class education to foster academic excellence, physical fitness and research in sports committed to helping scholars, researchers and sports scientist leap into the 21st century. The present endeavor is a tribute to the holy symbol of Lakshmibai National Institute of Physical Education, NERC as the same was long precious aspiration. The journal shall symbolically signify the essence of quality research thereby appropriate in the ambition of the institute. The journal shall offer a much desired platform to publish quality research being undertaken in the whole world on the area in question. The journal shall bring the academicians and researchers from all over the globe to share their accumulated experiences and perceptions in order to realize new scientific and original innovation focused on aspects of the sports sciences and sports performance.

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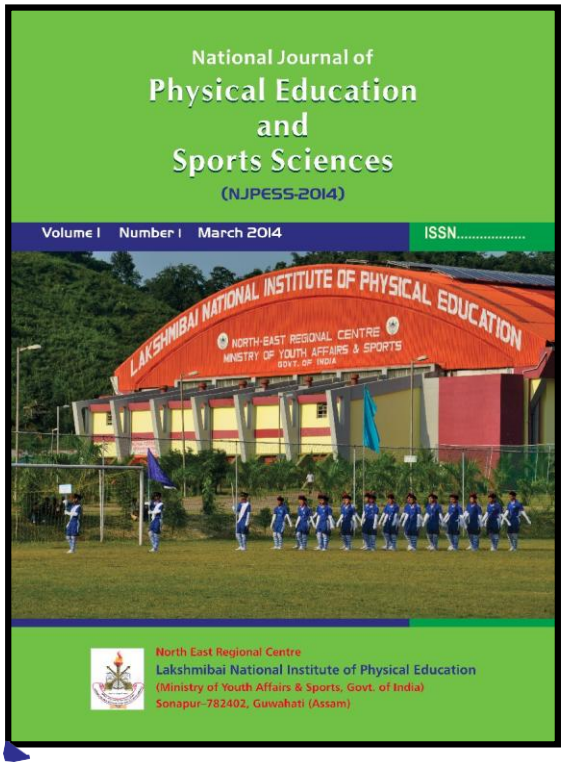

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LNIPE, Guwahati, Assam, India
Tel: +91-9098426839

N J P E S S

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Content

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Effect of Yogic Practice on Optimistic Pessimistic Attitude of College Going Students

***Mr. Ajit Pal Singh**[1]

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Abstract

The purpose of the study was to determine the effect of yogic practice on optimistic pessimistic attitude of college going studentsof subjects with the age range 17 to 25 years. For this 120 college going male subjects were drawn from RamanandaCollege, Bishnupur, Dist: Bankura (W.B). The subjects were divided into three treatment groups and one control group using random method. Group A was allotted Asanas treatment group consisted of 30 subjects, Group B was allotted Pranayama treatment group consisted of 30 subjects, Group C was allotted combination of Asana Pranayama treatment group consisted of 30 subjects and Group D control group consisted of 30 subjects. Pre post data were collected before and after intervention of yogic practice for 45 days by usingThe LOT-R test (Scheier& Carver, 1994) was administered to assess the optimism and pessimism status of the students. In the case optimistic attitude p-value for the F- statistic is 0.00 which is less than 0.05, so of it was significant and in the case of pessimistic attitude p-value for the F- statistic is 0.00 which is less than 0.05, so of it was significant.It was concluded that yogic practice improve the optimism attitude and decrease the pessimism attitudeof college going students.

Keywords –Asana, Pranayama, Asana & Pranayama, Optimistic Attitude, Pessimism Attitude.

Introduction

Regular practice of yoga enhances physical, emotional, intellectual, and spiritual health. The present work was taken up as data reported on the effect of yogic practice on optimistic pessimistic attitude of college going studentsthe aim of the study is to learn whether there is any change in Optimistic Pessimism Attitude by the influence of yogic practice.Optimism is a mental attitude or world view. A common idiom used to illustrate optimism versus pessimism is a glass with water at the halfway point, where the optimist is said to see the glass as half full and the pessimist sees the glass as half empty.

Pessimistic describes the state of mind of someone who always expects the worst. A pessimistic attitude isn't very hopeful, shows little optimism, and can be a downer for everyone else.

Hypotheses: On the basis of evidence indicating positive effect of yogicpracticeon psychological well-being of an individual the following hypotheses are formulated.

H1There will be a significant effect ofyogic Practice on optimistic pessimistic attitude of college going students.

Methodology

One hundred twenty (120) college going male students were selected randomly as subjects in the age group of 17 to 25 years from fromRamananda College, Bishnupur, Dist: Bankura (W.B) India. The subjects were divided into three treatment groups and one control group using random method. Group A was allotted Asanas treatment group consisted of 30 subjects, Group B was allotted Pranayama treatment group consisted of 30 subjects, Group C was allotted combination of Asana Pranayama treatment group consisted of 30 subjects and Group D control group consisted of 30 subjects. All the subjects those were selected for the study did not carry out the training programme for the entire training programme for twelve weeks.

Where;

- A= Asana Group
- B= Pranayama Group
- C=Asana Pranayama Group
- D= Control Group
- Q1 = pre- test
- X= yogic practice {Asana, Pranayama, and combination of Asana Pranayama practice(60 min. per day)}
- Q2= Post-test

Tools Used

The LOT-R test (Scheier& Carver, 1994) was administered to assess the optimism and pessimism status of the students.

Results

Table-1

Descriptive Statistics Of The Data Measured In The Post Testing Optimistic Attitude

Treatment Group	Mean	Std. Deviation	N
Asanas Group	7.93	2.42	30
Pranayama Group	8.26	2.13	30
Asana Pranayama Group	8.20	2.32	30
Control Group	5.36	2.47	30
Total	7.44	2.60	120

Table-2

Descriptive Statistics Of The Data Measured In The Post-Testing After Adjustment With The Initial Difference Optimistic Attitude

Treatment Group	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Asanas Group	7.91A	0.23	7.43	8.38
Pranayama Group	8.07A	0.23	7.60	8.55
Asana Pranayama Group	8.17A	0.23	7.70	8.64
Control Group	5.60A	0.23	5.12	6.07

Covariates appearing in the model are evaluated at the following values: pre Optimistic Attitude = 5.8667.

Table-3

Ancova Table For The Post-Test Data On Optimistic Attitude

Source	Sum Of Squares	Df	Mean Square	F	Sig. (P-Value)
Pre Behavior	478.20	1	478.20	281.25	0.00
Treatment Group	135.85	3	45.28	26.63	0.00
Error	195.53	115	1.70		
Corrected Total	809.59	119			

Table-4

Post Hoc Comparison For The Group Means In Post-Measurement Adjusted With The Initial Differences Optimistic Attitude

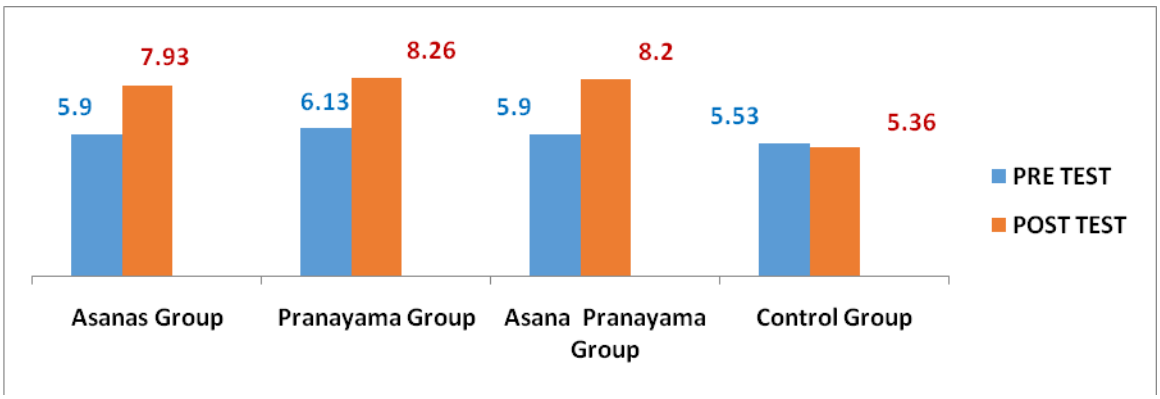
(I) Treatment Group	(J) Treatment Group	Mean Difference (I-J)	Sig.a (P-Value)
Asanas Group	Pranayama Group	-0.16	0.61
	Asana Pranayama Group	-0.26	0.43
	Control Group	2.30*	0.00
Pranayama Group	Asanas Group	0.16	0.61
	Asana Pranayama Group	-0.09	0.77
	Control Group	2.47*	0.00
Asana Pranayama Group	Asanas Group	0.26	0.43
	Pranayama Group	0.09	0.77
	Control Group	2.57*	0.00
Control Group	Asanas Group	-2.30*	0.00
	Pranayama Group	-2.47*	0.00
	Asana Pranayama Group	-2.57*	0.00

Based on estimated marginal means

a. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

**** The mean difference is significant at the 0.05 level.***

Figure:-1



Comparison of the Means on Optimistic Attitude of the Control Group and Three Experimental Groups

Interpretation of Findings

The values of the means and standard deviations for the data on Optimistic Attitude in the different Groups during the post testing is shown in the table 1. Further, adjusted means and standard deviation for the data on Optimistic Attitude of different Groups during post testing have been shown in table 2. This may be noted that these values are different from that of the unadjusted values shown in table 1. The advantage of using the ANCOVA is that the differences in the post-testing means are compensated for the initial difference in the scores. In other words, it may be said that the effect of covariate is eliminated in comparing the effectiveness of the treatment Groups during post-test.Table 3 shows the F –value for comparing the adjusted means of the four treatment Groups (Asanas Group, Pranayama Group, Asanas Parnayama Group and Control Group) during post-testing. Since p-value for the F- statistic is 0.00 which is less than 0.05, so of it is significant. Thus, the null hypothesis of no difference among the adjusted post-means for the data on Optimistic Attitude in four treatment Groups may be rejected at 5% level.Since F-statistic is significant, post hoc comparison has been made for the adjusted means of the four treatment Groups which is shown in table 4. It may be noted here that p-value for the mean difference between Asanas Group and Control Group is 0.00, Pranayama Group and Control Group is 0.00, Asana Pranayama Group and Control Group is 0.00, all these p-values are less than 0.05 and hence they are significant at 5% level. Thus, the following conclusions can be drawn:

There is a significant difference between the adjusted means of the Asanas Group and Control Group on the data of psychological variable Optimistic Attitude during post-test.

There is a significant difference between the adjusted means of the Pranayama Group and Control Group on the data of psychological variable Optimistic Attitude during post-test.

There is a significant difference between the adjusted means of the Asana Pranayama Group and Control Group on the data of psychological variable Optimistic Attitude during post-test.

In order to find as to which treatment is best, one can see the adjusted means values of different treatment Groups during post-testing given in table 2. Clubbing these adjusted means with the three conclusions mentioned above. Hence, it may be inferred that asana, Pranayama and Asana Pranayama are equally effective in increasing the Optimistic Attitude among the subjects in comparison to that of the Control Group.To Control Optimistic Attitude all the treatments proved to be effective as among all the Groups after treatment Optimistic Attitude has shown

upwards trends but Asan Pranayama together was most effective as difference between pre and post test was 2.3 for experimental Group which induces Pranayama difference between pre and post test was 2.13 in case of experimental Group which was under gone Asanas training was less effective. Still difference between pre and post test was 2.03.Which can be seen clearly in graphical representation that is figure-1.

Table-5

Descriptive Statistics Of The Data Measured In The Post Testing Pessimistic Attitude

Treatment Group	Mean	Std. Deviation	N
Asanas Group	4.83	1.89	30
Pranayama Group	4.73	2.01	30
Asana Pranayama Group	5.43	1.61	30
Control Group	7.50	2.41	30
Total	5.62	2.27	120

Table-6

Descriptive Statistics Of The Data Measured In The Post-Testing After Adjustment With The Initial Difference Pessimistic Attitude

Treatment Group	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Asanas Group	5.05A	0.25	4.55	5.55
Pranayama Group	4.62A	0.25	4.12	5.12
Asana Pranayama Group	5.63A	0.25	5.13	6.13
Control Group	7.18A	0.25	6.68	7.69

Covariates appearing in the model are evaluated at the following values: pre Pessimistic Attitude = 6.5333.

Table-7

Ancova Table For The Post-Test Data On Pessimistic Attitude

Source	Sum Of Squares	Df	Mean Square	F	Sig. (P-Value)
Pre Pessimistic Attitude	284.52	1	284.52	149.29	0.00
Treatment Group	112.43	3	37.47	19.66	0.00
Error	219.16	115	1.90		
Corrected Total	616.12	119			

Table-8

Post Hoc Comparison For The Group Means In Post-Measurement Adjusted With The Initial Differences Pessimistic Attitude

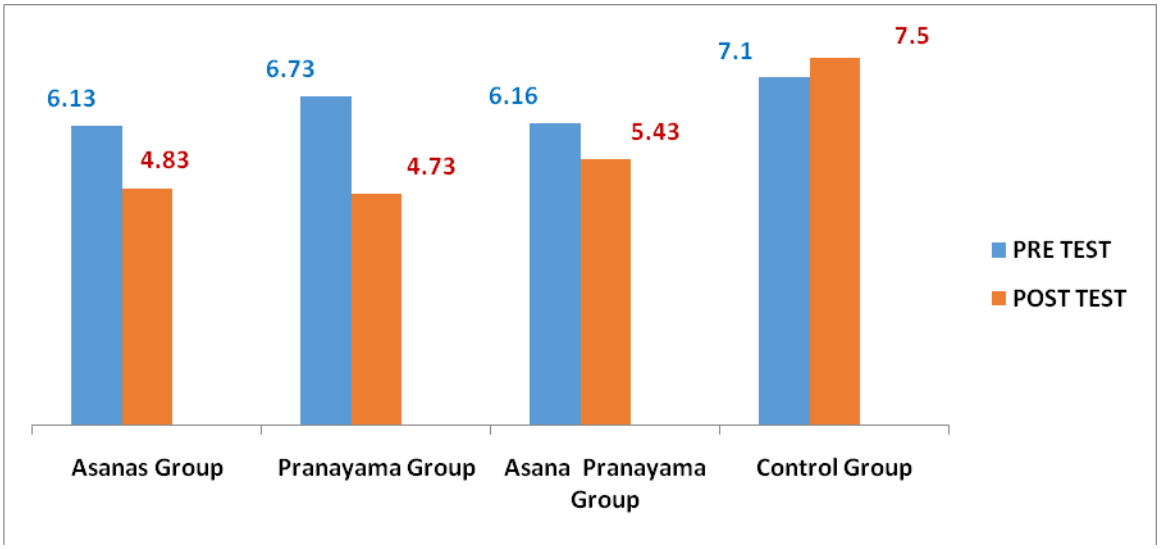
(I) Treatment Group	(J) Treatment Group	Mean Difference (I-J)	Sig.a (P-Value)
Asanas Group	Pranayama Group	0.42	0.23
	Asana Pranayama Group	-0.58	0.10
	Control Group	-2.13*	0.00
Pranayama Group	Asanas Group	-0.42	0.23
	Asana Pranayama Group	-1.01*	0.00
	Control Group	-2.56*	0.00
Asana Pranayama Group	Asanagroup	0.58	0.10
	Pranayama Group	1.01*	0.00
	Control Group	-1.55*	0.00
Control Group	Asanagroup	2.13*	0.00
	Pranayama Group	2.56*	0.00
	Asana Pranayama Group	1.55*	0.00

Based on estimated marginal means

a. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

****The mean difference is significant at the 0.05 level.***

FIGURE:-2



Comparison of the Means on Pessimistic Attitude of the Control Group and Three Experimental Groups

Interpretation of Findings

The values of the means and standard deviations for the data on Pessimistic Attitude in the different Groups during the post testing is shown in the table 5. Further, adjusted means and standard deviation for the data on Pessimistic Attitude of different Groups during post testing have been shown in table 6. This may be noted that these values are different from that of the unadjusted values shown in table 5. The advantage of using the ANCOVA is that the differences in the post-testing means are compensated for the initial difference in the scores. In other words, it may be said that the effect of covariate is eliminated in comparing the effectiveness of the treatment Groups during post-test. Table 7 shows the F –value for comparing the adjusted means of the four treatment Groups (Asanas Group, Pranayama Group, Asana Parnayama Group and Control Group) during post-testing. Since p-value for the F- statistic is 0.00 which is less than 0.05, so of it is significant. Thus, the null hypothesis of no difference among the adjusted post-means for the data on Pessimistic Attitude in four treatment Groups may be rejected at 5% level.Since F-statistic is significant, post hoc comparison has been made for the adjusted means of the four treatment Groups which is shown in table 8. It may be noted here that p-value for the mean difference between Asanas Group and Control Group is 0.00, Pranayama Group and Control Group is 0.00, Asana Pranayama Group and Control Group is 0.00, Asana Pranayama Group and the Pranayama Group is 0.00 all these p-values are less than 0.05 and hence they are significant at 5% level. Thus, the following conclusions can be drawn:

There is a significant difference between the adjusted means of the Asanas Group and Control Group on the data of psychological variable Pessimistic Attitude during post-test.

There is a significant difference between the adjusted means of the Pranayama Group and Control Group on the data of psychological variable Pessimistic Attitude during post-test.

There is a significant difference between the adjusted means of the Asana Pranayama Group and Control Group on the data of psychological variable Pessimistic Attitude during post-test.

There is a significant difference between the adjusted means of the Asana Pranayama Group and Pranayama Group on the data of psychological variable Pessimistic Attitude during post-test.

In order to find as to which treatment is best, one can see the adjusted means values of different treatment Groups during post-testing given in table 6. Clubbing these adjusted means with the three conclusions mentioned above. Hence, it may be inferred that Asanas, Pranayama and Asana Pranayama are equally effective in increasing the Pessimistic Attitude among the subjects in comparison to that of the Control Group.To Control Pessimistic Attitude all the treatments proved to be effective as among all the Groups after treatment Pessimistic Attitude has shown upwards trends but Pranayama was most effective as difference between pre and post test was 2 for experimental Group which induces Asanas difference between pre and post test was 1.3 in case of experimental Group which was under gone Asana Pranayama together training was less effective. Still difference between pre and post test was 0.73.Which can be seen clearly in graphical representation that is figure-2.

Discussion

Optimistic Attitude

Table 3 was referred back into the result section. It could be seen from the table that there was a significant difference in case of optimistic attitude after administrating the different training programme namely Asana, Pranayama and combination of Asana Pranayama.The post hoc test (Table 4) revealed that optimistic attitude was significantly improved in Asana Pranayama among the three experimental programme followed by Pranayama programme and Asana programme Groups. The effectiveness of Asana Pranayamaprogramme in comparison to other training programme may be due to the reason that Asana Pranayamaprogramme increase self-awareness of an individual regarding self and others. Therefore, proposed hypothesis has been accepted in case of optimistic attitude.

Pessimistic Attitude

Table 7 was referred back into the result section. It could be seen from the table that there was a significant difference in case of Pessimistic Attitude after administrating the different training programme namely Asana, Pranayama and combination of Asana Pranayama.The post hoc test (Table 8) revealed that Pessimistic Attitude was significantly improved in Pranayama among the three experimental programme followed by Asana programme and Asana Pranayamaprogramme Groups. The effectiveness of Pranayamaprogramme in comparison to other training programme may be due to the reason that Pranayamaprogramme decrease Pessimistic Attitude of an individual. Therefore, proposed hypothesis has been accepted in case of Pessimistic Attitude.

Conclusions

Asanas, Pranayama and combination of Asana Pranayama also improve the optimism attitude of college going students.

Asanas, Pranayama and combination of Asana Pranayama also decrease the pessimism attitude of college going students.

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Effect of Different Sprinting Ability during Sprint Start on Sprinting Performance : A Kinematic Study

Satpal Yadav

*Assistant Professor, Lakshmibai National Institute of Physical Education, NERC, Guwahati.

Abstract

The purpose of the study was to assess the effect of 2D kinematical selected variables on sprint start with Sprinting Performance of Novice Athletes. Six (3 National and 3 State level) athletes of Sports Authority of India, Guwahati has been selected for this study. The mean (M) and standard deviation (SD) of sprinters were age (17.44, 1.55), height (1.74. m, .84 m), weight (62.25 kg, 4.55), arm length (65.00 cm, 3.72) and leg length (96.35 cm, 2.71). Biokin-2D motion analysis system V4.5 can be used for acquiring two-dimensional kinematical data/variables on sprint start with Sprinting Performance. For the purpose of kinematic analysis a standard motion driven camera which frequency of the camera was 60 frame/ second i.e. handy camera of Sony Company were used. The sequence of photographic was taken under controlled condition. The distance of the camera from the athletes was 12 mts away and was fixed at 1.2-meter height. The result was found that National and State level athletes significant difference in there, Trajectory Knee, Trajectory Ankle, Displacement Knee, Displacement Ankle, Linear Velocity Knee, Linear Velocity Ankle and Linear Acceleration Ankle whereas insignificant difference was found between National and State level athletes in their Linear Acceleration Knee joint on sprint start with sprinting performance. For all the Statistical test the level of significance was set at $p<0.05$.

Keywords— 2D Kinematic Analysis, Sprinting Ability, Sprinting Performance

Introduction

The most powerful nations of the world namely USA, Russia, France, Australia, China etc are strong enough not only in World Economics, Army Strength or in science technology but they are also advanced in the field of sports, therefore it is quite apparent that to exist strongly in world map nation has to be advanced in the field of sports also. To achieve the same adoption of new techniques and methodology is highly required in Sports Sciences and Physical Education. Sciences of applied mechanism are fulfilling these demands of high technological knowledge for the enhancement of performance in the field

of sports.

Sprinting includes a rapid acceleration phase followed by a maintenance pace (constant velocity). During the early stage of sprinting, the runners have their upper body tilted forward in order to get ground reaction forces more horizontally. Sprinters, whose events are based on power, differ greatly from more economical distance runners in both physical appearance and running biomechanics. Sprinting is product of stride length and frequency of stride that emphasizes speed and power. Sprinting events are divided into three main phases: acceleration, maintenance, and deceleration. The acceleration phase is characterized by aggressive, powerful running form used to build the momentum needed to overcome inertia and achieve maximum velocity. In the last few decades, much has been added to ours scientific knowledge of biomechanics, a science concerned with the internal and external forces acting on the human body and the effects produced by these forces and activity of the muscles. At the highest levels of sports in which techniques play a major role, improvement comes so often from careful attention to detail that no coach can afford to leave these details to chance or guesswork. For such coaches knowledge of biomechanics might be regarded as essential.

Materials and Methods

Subjects

A total Six (3 National and 3 State level) athletes of Sports Authority of India, Guwahati has been selected for this study. The mean (M) and standard deviation (SD) of sprinters were age (17.44, 1.55), height (1.74. m, .84 m), weight (62.25 kg, 4.55), arm length (65.00 cm, 3.72) and leg length (96.35 cm, 2.71).

Collection of Data

The data collected by the help of Biokin-2D motion analysis system V4.5 method and the sprinting performance of the subject during sprint start in athletic.

Filming Procedure

Biokin-2D motion analysis system V4.5 can be used for acquiring two-dimensional kinematical data/variables on Sprint Start with Sprinting Performance. For the purpose of kinematic analysis a standard motion driven camera which frequency of the camera was 60 frame/ second i.e. handy camera of Sony Company was used. The sequence of photographic was taken under controlled condition. The distance of the camera from the athletes was 12 mts away and was fixed at 1.2 meter height. The performance of sprinters were measured manually hand timing with stopwatch for each subject. Before data acquisition subjects were asked to go for complete warm-up for at least 15 minutes by stretching all major muscle groups for better performing the sprint start. After warming up all the athletes have to perform 100 meters sprint and the time recorded in 1/1000 of the seconds for each athlete was selected for further analysis.

Data Analysis

The data was collected with the help of digital photography, the photography were analysed (1/1000 sec) by standard analysis method. With the help of Biokin-2D motion analysis computer software we can measure the dimension of each photograph with the help of which various kinematical variables were calculated during sprint start.

Statistical Analysis

To determine the effect of selected kinematic variables on sprint start with the sprinting performance of subjects. The data of this study was analyzed by using a t-test to infer the difference between national and state level Sprinters. The level of significance was 0.05.

Results

The purpose of this study was to determine kinematic difference between on sprint start with sprinting performance of sprinters of Sports Authority of India, Guwahati and find out those variables which are given positive contribution in sprinting ability and sprinting performance. The results and analysis of the data of the study have been presented on six sprinters. Independent t –test were used to find out differences and relationship between sprint start and sprinting performance.

Table 1

Descriptive Statistics Of Selected Kinematical Parameters

Variables	State Level		National Level	
	Mean	SD	Mean	SD
TJK (m)	1.81	0.52	1.88	0.55
TJA (M)	1.88	0.59	2.28	0.46
DPK (M)	0.033	0.09	0.035	0.22
DDA (M)	0.035	0.09	0.003	0.12
LVK (m/s)	1.32	2.32	1.93	2.86
LVA (M/S)	1.37	2.17	2.32	2.82
LAK (m/s2)	0.49	17.13	6.86	24.31
LAA (m/s2)	1.45	30.11	10.84	37.16

TJK=Trajectory Knee, TJA= Trajectory Ankle, DPK= Displacement Knee, DDA= Displacement Ankle, LVK= Linear Velocity Knee, LVA= Linear Velocity Ankle, LAK= Linear Acceleration Knee, LAA= Linear Acceleration Ankle.

As indicated in Table-1 National level athletes have longer trajectory Knee Joint (1.88 m) and Trajectory Ankle Joint (2.28) as compare to state level athletes (1.81 m) and (1.88 m), that might be the reason the Linear Velocity Knee (1.93 m/s), Linear Velocity Ankle (2.32 m/s), Linear Acceleration Knee (6.86 m/s2)

and Linear Acceleration Ankle (10.84 m/s2) is greater than state level (1.32 m), (1.37 m), (0.49 m/s2) and (1.45m/s2) athletes. The Displacement of Knee joint and Displacement of ankle joint in grater in National level athletes respectively.

As showed in the Table 2 there were significant differences found between National level and State level athletes in there, Trajectory Knee, Trajectory Ankle, Displacement Knee, Displacement Ankle, Linear Velocity Knee, Linear Velocity Ankle and Linear Acceleration Ankle whereas insignificant difference was found between National level and State level athletes in their Linear Acceleration Knee joint.

Table 2:

Independent 'T' Value Of Selected Parameters Between National Level And State Level Athletes

Parameters	Calculated 't' value
TJK	3.23*
TJA	5.71*
DPK	4.34*
DDA	3.59*
LVK	3.13*
LVA	3.34*
LAK	2.45
LAA	3.53*

****Significance at 0.05 level of confidence with 4 df Tab 't' = 2.77***

Discussion

The main purpose of this study was to find out kinematical differences between National level and State level athletes of Sports Authority of India, Guwahati, Assam. The sequential photography technique was employed to record the kinematic variables. Result show that Trajectory, displacement linear velocity, linear acceleration of knee and ankle joints of the sprinters was is better position in quantitative evaluation. From the photographs, the stick figures were prepared by using Joint-point Method, and various kinematic variables were obtained at the moment start the sprinting.

The length and duration of acceleration was unwavering by the starting position of the knee and when the body is almost fully stretched. In other to attained quick acceleration sprinter adopts the correct knee bent angle during start at the beginning of the acceleration. In the case of National level and State level sprinters position of set was correct would have helped them to attain lower and lesser Trajectory, improved displacement and good velocity of the knee and ankle joint.

The National level athletes have longer trajectory Knee Joint (1.88 m) and Trajectory Ankle Joint (2.28) as compare to state level athletes (1.81 m) and (1.88 m), that might be the reason the Linear Velocity Knee (1.93 m/s), Linear Velocity Ankle (2.32 m/s), Linear Acceleration Knee (6.86 m/s2) and Linear Acceleration Ankle (10.84 m/s2) is greater than state level (1.32 m), (1.37 m), (0.49 m/s2) and (1.45m/s2) athletes. The Displacement of Knee joint and Displacement of ankle joint in greater in National level athletes respectively.

Conclusion

Findings of this exploratory study suggest that the National and State level athletes significant difference in there, Trajectory Knee, Trajectory Ankle, Displacement Knee, Displacement Ankle, Linear Velocity Knee, Linear Velocity Ankle and Linear Acceleration Ankle whereas insignificant difference was found between National and State level athletes in their Linear Acceleration Knee joint on sprint start with sprinting performance. For all the Statistical test the level of significance was set at $p<0.05$.

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Comparison of Selected Biomechanical Variables and Performance of National Level Judokas in Kata Guruma

Dr. R. Chakravarty

*Assistant Professor, Deptt. Of Physical Education, University College of Medical Sciences (University of Delhi), Delhi.

Abstract

The purpose of this study was to measure the relationship of selected biomechanical variables to the performance of National level Judokas in kata guruma. The subjects for this study were 60 male judokas who had represented their respective states in national tournaments(12 subjects from each team). Their age ranged from nineteen to twenty five years. All the subjects were right handed throwers. The data was analyzed by use of Ananlysis of Variance and LSD Test. The level of significance chosen to test the hypothesis was .05. None of the selected angular biomechanical (kinematic) variables that is Ankle Joint (Right and Left), Knee Joint (Right and Left), Shoulder Joint (Right and Left), Elbow Joint (Right and Left) and Wrist (Right and Left), and Hip Joint (Left and Right) has significant difference also the performance of Judokas in kata guruma. In case of Linear A biomechanical (kinematic) variable that is height of center of gravity at moment contact does not have significant difference in Judokas in kata guruma.

Key Words: Biomechanical, Kinematics, Kata guruma.

Introduction

Judo (jūdō?, meaning "gentle way") is a modern martial art, combat and Olympic sport created in Japan in 1882 by Jigoro Kano (嘉嘉嘉嘉嘉). Its most prominent feature is its competitive element, where the objective is to either throw or takedown an opponent to the ground, immobilize or otherwise subdue an opponent with a pin, or force an opponent to submit with a joint lock or a choke. Strikes and thrusts by hands and feet as well as weapons defenses are a part of judo, but only in pre-arranged forms (kata, 嘉) and are not allowed in judo competition or free practice (randori, 嘉嘉嘉). A judo practitioner is called a judoka.

The philosophy and subsequent pedagogy developed for judo became the model for other modern Japanese martial arts that developed from koryū (嘉嘉?, traditional schools). The worldwide spread of judo has led to the development of a number of offshoots such as Sambo and Brazilian jiu-jitsu.

The early history of judo is inseparable from its founder, Japanese polymath and educator Jigoro Kano (嘉嘉 嘉嘉嘉 Kanō Jigorō, 1860–1938), born Shinnosuke Kano (嘉嘉 嘉嘉嘉 Kanō Shinnosuke). Kano was born into a relatively affluent family. His father, Jirosaku, was the second son of the head priest of the Shinto Hiyoshi shrine in Shiga Prefecture. He married Sadako Kano, daughter of the owner of Kiku-Masamune sake brewing company and was adopted by the family, changing his name to Kano, and ultimately became an official in the Shogunal government.[1]

The role that sports biomechanics can play is becoming more widely understood in sports community and the demand for service increasing, researchers in sports biomechanics will have to consider carefully how much time they can devote to the provision of scientific services without impairing their performance as scholar researchers. To develop programmers of study for the training of techniques in sports biomechanics, technicians who can provide the kind of services sought by sporting bodies.

In order to analyze the techniques o sports and games, photographic methods is probably the most popular methods. Although this is not a recent development, photography was formally limited to the filming of few sports only. It is now being applied to many sports at an increasing rate.

Recently videotapes have begun to replace conventional motion pictures for teaching and coaching purpose. Since videotape is erasable reusable and does not require any developing. It is more economical than film. The relatively inexpensive recorders are simple to operate and permit immediate play back.

Biomechanics and Judokas in kata guruma practices described by some of the authors are as follows: -

Biomechanics

A branch of physics concerns with the description of the motion of objects without considering the forces that causes or result from the motions. It is a study of motion that aims to provide a description of the spatial position of points in moving bodies. For the purpose of this study Biomechanical variables were represented by the selected angles of the various joints of human body and height of center of gravity at moment contact.

Kinematics

Kinematics will be represented by the selected angles of the various joints of human body and height of center of gravity at selected moment.

Kata Guruma

Kata guruma (嘉嘉) is one of the traditional forty throws of Judo as developed by Kano Jigoro.Kata guruma belongs to the third group of the traditional throwing list

1. ***Daigo, Toshiro (2005), Kodokan Judo Throwing Techniques, Tokyo, Japan: Kodansha International***

in the Gokyo no waza of the Kodokan Judo. It is also part of the current 67 Throws of Kodokan Judo. Because the technique is not a sweep nor a trip and requires tori to pull uke into a carry, it is categorized as a hand throwing technique (tewaza).

Methodology

The subjects for this study were 48 male Judokas who had represented there respective states in National Judo tournaments. Four teams were selected for this study namely: Uttar Pradesh, Uttarakhand, Delhi and Haryana (12 subjects from each team).There age ranged from Nineteen to Twenty Five years.

All the subjects were right handed Throwers.ollowing were the Kinematic variables which were constituted in the study: The selected kinematical variables were divided in two parts i.e.

a) Linear Kinematic Variable were:

Height of Center of Gravity at moment release.

b) Angular Kinematic Variables were represented by the angles at selected joints i.e.

Ankle joints

Knee joints

Hip joints

The scholar developed stick figures on the photographs, from which selected kinematical variables were calculated. The stick figures were developed by using Joint-point method. The center of gravity of each subject, at one selected moment.

Procedure for Location of Center of Gravity

The center of gravity of the body at moment release was determined by use of segmentation method.

Analysis of Data and Results of the Study

The data was analyzed by use of Analysis of Variance and LSD Test. The level of significance chosen to test the hypothesis was .05 and are presented in Table-I, Table-II, Table-III, Table-IV.

Table-I

Analysis of Variance of the Mean Difference of the Four Groups for Height of Centre of Gravity at Moment Contact

Source of Variance	df	Sum of Square	Mean Sum of Square	'F' Ratio
Between Groups	3	3731	1243.06	9.48*
Within Groups	44	6295.92	131.66	

****Significant at .05 level.***

F.05 (3, 44) = 2.82

It is evident from Table – I that variability exists among the four groups with respect to criterion variable namely Height of Centre of Gravity at moment contact. As each player has his own reach as per the flexibility of the groin muscle and leg length so the difference in the Centre of Gravity at moment contact must have been there.

Since there is significant difference in the result of 'One Way Analysis of Variance' therefore Post Hoc (LSD) test was applied to find out which of the mean difference amongst the group were statistically significant. The data relating to this is presented in Table -II.

Table-II

Least Significant Difference Post Hoc Test for Mean of the Four Groups for Height of Centre of Gravity at Moment Contact

Uttar Pradesh	Delhi	Uttaranchal	Haryana	M. D.	C. D.
	188.72		185.20	-3.52*	
		183.15	185.20	-2.05*	
166			185.20	-19.2*	0.2282
	188.72	183.15		-5.57*	
166		183.15		-17.15*	

****Significant at .05 level.***

The above table II shows that there was significant difference between the means of Delhi and Haryana Under-1 9 teams in which as per the terms of means Delhi Judokaswas found to be superior.

Significant difference was also found between the means of Uttaranchal and Haryana Judokas in which as per the terms of means Haryana Judokaswas found to be superior. Significant difference was also found between the means of Uttar Pradesh and Haryana Judokas in which as per the terms of means Haryana Judokaswas found to be superior. Table – 4.26 also reveals that difference was found between the means of Delhi and Uttaranchal Judokasas per the means the Delhi Judokaswas found to be superior. Significant difference was also found between the means of Uttar Pradesh and Uttaranchal Judokas in which as per the terms of means Uttaranchal Judokaswas found to be superior. Difference between the means of four groups is shown in Fig. -1.

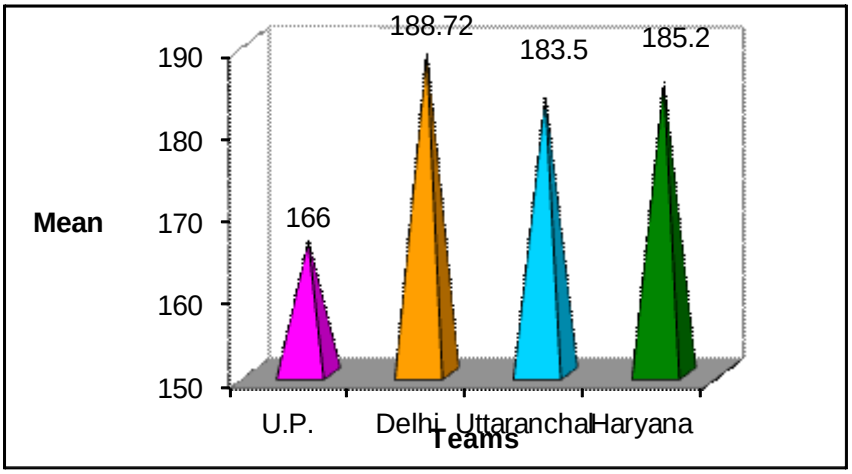


Fig.1 Bar Diagram Representing Means for Four Judokas for Height of Centre of Gravity at Moment contact

All the teams were compared to find out the effect of the variables on them on the basis the selected kinematic variables, and performance in kata guruma. One way Analysis of Variance and Least Significant Difference Test (LSD) was used to compare the groups on the basis of kinematic variables as the ankle of the joints play a vital role in performing a skill and the more is the range of the joint the better would be performance so the researcher has made an attempt to compare the four groups on the basis of the angular kinematic variables namely ankle joint which is presented in Table-III.

Table-Iii

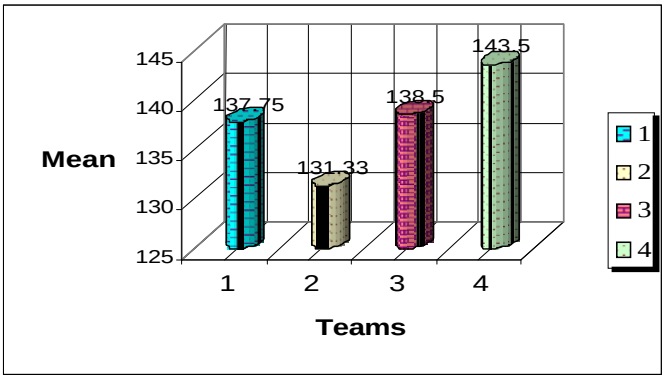
Analysis of Variance of the Mean Difference of the Four Groups For Ankle Joint (Left)

Source of Variance	df	Sum of Square	Mean Sum of Square	'F' Ratio
Between Groups	3	897.56	244.18	0.2847
Within Groups	44	1668.41	378.84	

It is evident from Table -4.9 that variability does not exists among the four teams with respect to criterion variable namely ankle joint(left).This must be because most of the players tend to keep there ankle in the same position at the execution of the kata guruma.

Since there is no significant difference in the result of 'one way analysis of variance' therefore post hoc (LSD) test was not applied to but some difference was found in there means respective means which is depicted in Fig.2.

Fig.2 Bar Diagram Representing Means for Four Teams for Left Ankle Joint



One way Analysis of Variance and Least Significant Difference Test (LSD) was used to compare the groups on the basis of kinematic variables as the ankle of the joints play a vital role in performing a skill and the more is the range of the joint the better would be performance so the researcher has made an attempt to compare the four groups on the basis of the angular kinematic variables namely ankle joint which is presented in Table-III.

Table-Iii

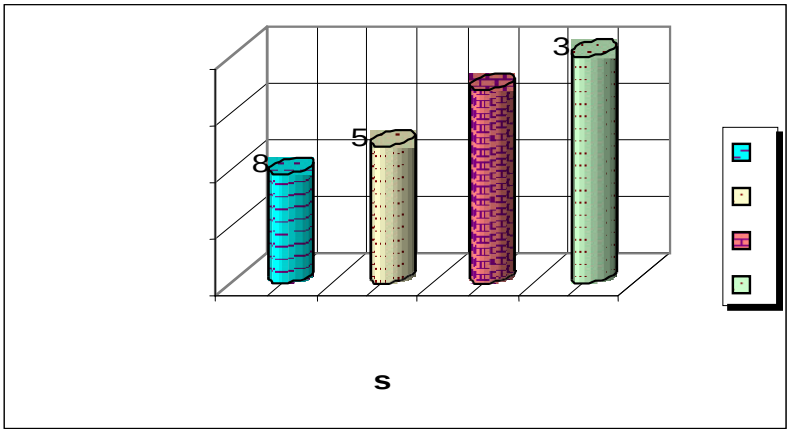
Analysis Of Variance Of The Mean Difference Of The Four Groups For Ankle Joint (Right)

Source of Variance	df	Sum of Square	Mean Sum of Square	'F' Ratio
Between Groups	3	897.56	244.18	1.65
Within Groups	44	1668.41	378.84	

It is evident from Table -III that variability does not exists among the four teams with respect to criterion variable namely ankle joint(right).This must be because most of the players tend to keep there ankle in the same position at the execution of the kata guruma.

Since there is no significant difference in the result of 'one way analysis of variance' therefore post hoc (LSD) test was not applied to but some difference was found in there means respective means which is depicted in Fig.3.

Fig.3 Bar Diagram Representing Means for Four Teams for Right Ankle Joint



One way Analysis of Variance and Least Significant Difference Test (LSD) was used to compare the groups on the basis of kinematic variables as the ankle of the joints play a vital role in performing a skill and the more is the range of the joint the better would be performance so the researcher has made an attempt to compare the four groups on the basis of the angular kinematic variables namely knee joint which is presented in Table-IV.

Table-Iv

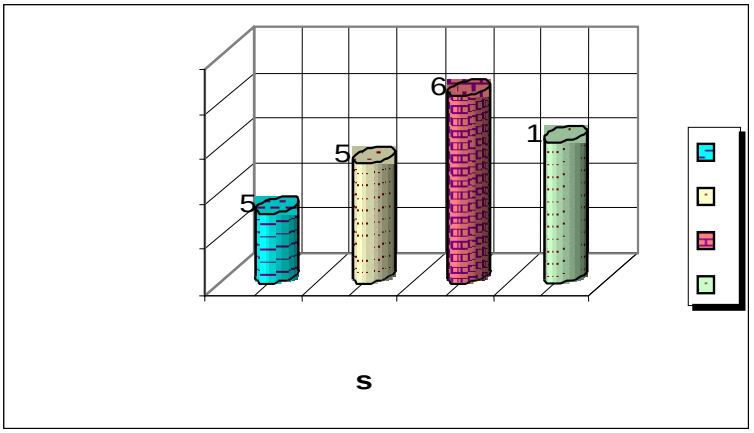
Analysis Of Variance Of The Mean Difference Of The Four Groups For Knee Joint (Right)

Source of Variance	df	Sum of Square	Mean Sum of Square	'F' Ratio
Between Groups	3	1059.89	353.9	1.66
Within Groups	44	9337.41	212.1	

It is evident from Table -IV that variability does not exists among the four teams with respect to criterion variable namely knee joint(right).This must be because most of the players tend to keep there knee in the same position at the execution of the kata guruma.

Since there is no significant difference in the result of 'one way analysis of variance' therefore post hoc (LSD) test was not applied to but some difference was found in there means respective means which is depicted in Fig.4.

Fig.4 Bar Diagram Representing Means for Four Teams for Right Knee Joint



One way Analysis of Variance and Least Significant Difference Test (LSD) was used to compare the groups on the basis of kinematic variables as the angle of the joints play a vital role in performing a skill and the more is the range of the joint the better would be performance so the researcher has made an attempt to compare the four groups on the basis of the angular kinematic variables namely knee joint which is presented in Table-V.

Table-V

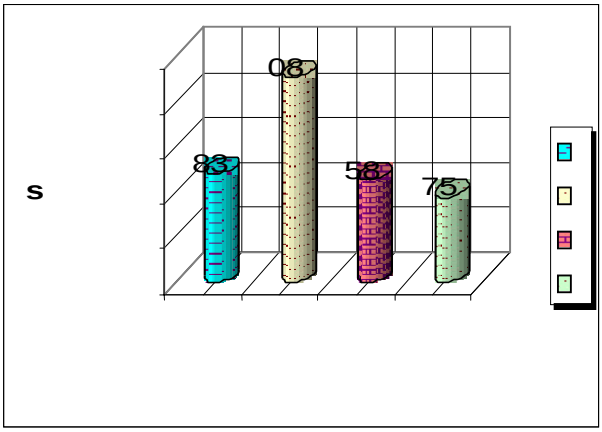
Analysis Of Variance Of The Mean Difference Of The Four Groups For Knee Joint (Left)

Source of Variance	df	Sum of Square	Mean Sum of Square	'F' Ratio
Between Groups	3	206.06	68.68	0.44
Within Groups	44	6943.87	153.73	

It is evident from Table -V that variability does not exists among the four teams with respect to criterion variable namely knee joint(left).This must be because most of the players tend to keep there knee in the same position at the execution of the kata guruma.

Since there is no significant difference in the result of 'one way analysis of variance' therefore post hoc (LSD) test was not applied to but some difference was found in there means respective means which is depicted in Fig.5.

Fig.5 Bar Diagram Representing Means for Four Teams for Left Knee Joint



One way Analysis of Variance and Least Significant Difference Test (LSD) was used to compare the groups on the basis of kinematic variables as the angle of the joints play a vital role in performing a skill and the more is the range of the joint the better would be performance so the researcher has made an attempt to compare the four groups on the basis of the angular kinematic variables namely hip joint which is presented in Table-VI.

Table-Vi

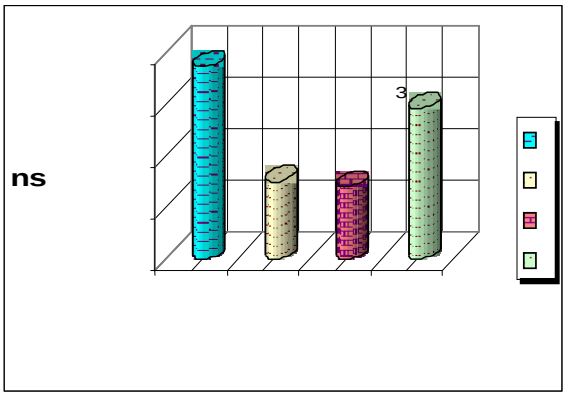
Analysis Of Variance Of The Mean Difference Of The Four Groups For Hip Joint (Right)

Source of Variance	df	Sum of Square	Mean Sum of Square	'F' Ratio
Between Groups	3	181.83	60.61	0.33
Within Groups	44	8082.03	183.70	

It is evident from Table -VI that variability does not exists among the four teams with respect to criterion variable namely hip joint(right).This must be because most of the players have there hip in the same position at the execution of the kata guruma.

Since there is no significant difference in the result of 'one way analysis of variance' therefore post hoc (LSD) test was not applied to but some difference was found in there means respective means which is depicted in Fig.6.

Fig.6 Bar Diagram Representing Means for Four Teams for Right Hip Joint



Discussion of Findings

No variation was found between the groups in case of all the Judokas in terms of their performance in Kata guruma but the mean of the performance of Haryana was a little high than the other teams. As the performance of the Judokas is more or less the same but in this age of cut throat competition even a little difference can win or lose matches but the skill tested was under controlled conditions and was also one in number so if a detailed study on each and every skill (Hook Shot, Pool Shot, Drive Shot etc.) may be done difference can found.

No variation was found between the Judokas in terms of their Angular Kinematic Variables Ankle Joint (Right and Left), Knee Joint (Right and Left), Shoulder Joint (Right and Left), Elbow Joint (Right and Left) and Wrist (Left), and Hip Joint (Left and Right) apart from right wrist joint and Height of Centre of Gravity at moment contact which was the highest in case of Uttar Pradesh Under-19 state team. No significant difference was found between the means of Uttar Pradesh and Haryana, Delhi and Haryana, Uttaranchal and Haryana but the means of the Uttar Pradesh and Delhi, Delhi and Uttaranchal were found to be statistically significant as per the LSD test implemented which showed the mean difference 13.91 in case of Uttar Pradesh and Haryana,8.08 in case of Delhi and Haryana and 8.41 in case of the means of Uttar Pradesh and Haryana , Delhi and Haryana, Uttaranchal which was higher than the tabulated value of 3.59. The analysis of data clearly reveals that the Uttar Pradesh and the Uttaranchal Under-19 State team are better in terms of right Wrist Angle. In case of Height of The Center of Gravity the following state teams differed Uttar Pradesh and the Delhi State team as the mean difference was 22.49, Uttar Pradesh and Uttaranchal Under-19 State team which was 15.34, Uttar Pradesh and Haryana was 16.62 which was higher than the tabulated value of 3.59 hence it could be said that Delhi and Uttaranchal Under-19 State team was better in terms of Height of Center of Gravity at moment contact.

Conclusions

No variation was found between the groups in case of all the National Teams in terms of their performance in Kata guruma but the mean of the performance of Haryana was a little high than the other Judokas.

No variation was found between the Judokas in terms of their Angular Kinematic variables Ankle Joint (Right and Left), Knee Joint (Right and Left), Shoulder Joint (Right and Left), Elbow Joint (Right and Left) and Wrist (Left), and Hip Joint (Left and Right) apart from right wrist joint and Height of Centre of Gravity at moment contact which was the highest in case of Uttar Pradesh Under-19 state team. No significant difference was found between the means of Uttar Pradesh and Haryana , Delhi and Haryana, Uttaranchal and Haryana but the means of the Uttar Pradesh and Delhi, Delhi and Uttaranchal were found to be statistically significant as per the LSD test implemented which showed the mean difference 13.91 in case of Uttar Pradesh and Haryana,8.08 in case of Delhi and Haryana and 8.41 in case of the means of Uttar Pradesh and Haryana, Delhi and Haryana, Uttaranchal which was higher than the tabulated value of 3.59. The analysis of data clearly reveals that the Uttar Pradesh and the Uttaranchal Under-19 State team are better in terms of Right Wrist angle. In case of Height of the Center of Gravity the following state teams differed Uttar Pradesh and the Delhi Under-19 State team as the mean difference was 22.49, Uttar Pradesh and Uttaranchal State team which was 15.34, Uttar Pradesh and Haryana was 16.62 which was higher than the tabulated value of 3.59 hence it could be said that Delhi and Uttaranchal Under-19 State team was better in terms of Height of Center of Gravity at moment contact.

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Relationship Between Selected Motor Fitness Variablesandbasketball Shootingability

Dr. Satish Sharma

*Assistant Professor, Physical Education, DAV University, Jalandhar, Punjab-144012.

Abstract

Purpose of study was to find out the correlation between selected motor fitness variables and basketball shooting ability. Sample of forty male subjects was selected from North Zone Inter University tournament. Purposive Random sampling method was used to select the samples. The basketball shooting ability was measured by using Field Goal Speed Test (Johnson 1934) and Selected motor fitness test items such as Vertical Jump Test (Indiana Motor Fitness test 1943), 50 meter Dash (Johnson and Nelson 1979), Stork balance stand test (Johnson and Nelson 1979) and Alternate Hand wall toss test for coordinative ability were used for data collection. For analysis and interpretation of data, the investigator was completely relied on MS-Excel. Mean, Standard Deviation, Pearson Product Moment Relation statistical techniques were used by the investigator. Motor fitness variables Vertical jump, Alternate hand wall test have a significant relationship with basketball shooting ability and it was concluded that there exists insignificant relationship between Stork stand balance test, 50 m dash and shooting ability of basketball player.

Introduction

Motor fitness is the ability to perform activities that require muscular coordination such as walking, running, playing and manipulating instrument and machinery. General motor fitness is the immediate capacity of an individual, to perform in many varied stunts or athletic event Mathews (1973). Motor Fitness refers to the efficiency of basic movements in addition to the physical fitness. Basketball is the one of the most popular sports in the World. Along with its popularity, Basketball has improved at a fast pace, over the years. There is marked change in player's physical features and games techniques and tactics, as well as multivariate pressure over the players. The performance in various sports including Basketball depends directly on physical fitness, technical skills, tactical efficiency and psychological state of players. The motor fitness and technical skills are interrelated and interdependent (Harre,

1979). Skills of game play a vital role in performance. Shooting is one of the most important skills because it is the way to accumulate scores for the team, also motor fitness variables and physical characteristics plays a vital role in Basketball shooting, which can be proved by the study which is mainly aimed at determining and analyzing motor abilities of European top-quality young female basketball players. The result of the study confirms that the differences between individual player types can also be confirmed in a sample of European top-quality young female basketball players. They were distinctly differentiated in body height and mass, whereas it was also confirmed that there exists differences in motor abilities of the players as well. Motor ability of individual player varies considerably, according to their height and mass. There exists difference in the performance of motor abilities, when tested in general, but when specific skills were performed, results were contrary when compared to previous results. The differences are not only a consequence of the differences in body height but also of the different playing roles of individual types of players as well as the technical and tactical knowledge of the game. (2009, Frane Erculj et al.)

Methodology

Forty Inter University male Basketball players were selected from the teams which participated in North Zone Inter University tournament held in Punjab, October 2009. Purposive Random sampling method was used to select the samples. Prior to the administration of pre-test, a meeting with all subjects was held. The purposes of study along with the various testing procedures were explained to them. Motor fitness test items which were used for data collection are : Vertical Jump Test (mtr.) (Bookwalter, K.W. (1943), Fifty meter Dash (sec.) (Johnson and Nelson. 1979), Stork balance stand test (sec.) (Johnson and Nelson. 1979) and Alternate Hand wall toss test for coordinative ability (Bookwalter, K.W. and C.W. Bookwalter. (1962). For analysis and interpretation of data, the investigator was completely relied on MS-Excel and statistical techniques which was used are Mean, Standard Deviation and Pearson's Product Moment Relation. Objective of the study is to find out the relationship between selected motor fitness variables with basketball shooting ability. It is hypothesized that there will be significant relation between selected motor fitness variables with basketball shooting ability.

Results

The analysis and interpretation of the present study have been presented below:

Table - 1

Relationship between motor fitness variables and shooting ability of basketball Players

S.No.	VARIABLES	MEAN	COEFFICIENT OF CORRELATION
1.	Vertical Jump	20.79	0.839*
2.	Alternate Hand Wall Test	27.40	0.337*
3.	Stork Stand Balance Test	9.07	-0.026
4.	50 m Dash	7.22	-0.390

**** Significant at 0.05 level***

Table value of 'r' for 38 degree of freedom was .30

Table-1 shows the obtained value of relation (r = 0.304) for 38 degree of freedom. The value of coefficient of relation for motor fitness variables namely vertical jump (0.839), Alternate hand wall test (0.337) of the subject was greater than the table value of 0.304 (38) at 0.05 level of significance and thus have positive and significant relation. Whereas the obtained value of coefficient of relation in other motor fitness variables i.e. Stork stand balance test (-0.026) and 50 m dash (-0.390) showed negative relation with basketball shooting ability.

Study aimed to find out the relation between basketballs' shooting ability with selected Motor Fitness variables. Based on the analysis and within the limitations of the present study, following conclusion can be drawn:

Since 'r' for Vertical jump (0.839), Alternate hand wall test (0.337) of the subjects was greater than the table value of 0.304 (38) which is significance at 0.05 level. Thus the hypothesis of the study is accepted. Thus it may be concluded that Vertical jump, Alternate hand wall test have positive relation with basketball shooting ability. Whereas the 'r' in other motor fitness variables i.e. Stork stand balance test(- 0.026) and 50M (-0.390) showed negative relation with basketball shooting ability and the hypothesis is rejected Thus it may be concluded that Stork stand balance test and 50 m dash have no any effect on the shooting ability of basketball player.

Motor fitness variables Vertical jump, Alternate hand wall tests have significant relationship with basketball shooting ability and non significant relationship exists between Stork stand balance test and 50m dash and shooting ability of basketball player.

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