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## Assessment The Circulatory And Respiratory Function Of Table Tennis Students In Hochiminh City University Of Sport

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### Abstract

Through the application system device Metamax 3B assess respiratory function, circulation of O<sub>2</sub> and CO<sub>2</sub> index, heart rate .... table tennis student, Universities Sports Hochiminh City to provide some useful information contributing to improving the quality of teaching and training of the university.

**Keywords:** *Metamax 3B, table tennis, sport, student.*

### Introduction

Metamax 3B is the circulatory system, respiratory portable dynamometer (CPX system) due to the gas exchange in the lungs in activity, directly measuring gas exchange including: O<sub>2</sub> and CO<sub>2</sub> in the air breathing in/out, heart rate, ventilation, ambient temperature, pressure... developed countries are widely used in the evaluation test of endurance athletes by athletes such as America, Britain, Germany, holland, Korea... while in Vietnam is beginning to apply some test and evaluation capability index circulatory, respiratory of sport player and athletes sport as Tran Tuan Hieu, Nguyen Trung Kien (2013) "Recovery respiratory function of high level table tennis player when the physical activity in the maximum capacity," as well as works by authors Truong Duc Thang (2011) "Cortex Metamax 3B system applications at evaluating in functional circulatory, respiratory male athletes young badminton Bac Ninh Sports University", in addition to works by Nguyen Thi Thanh Nhan:"Description of the functions circulatory, respiratory activity of the students running the 100m, Bac Ninh Sports University on Cortex Metamax 3B system". Thereby, the study initially evaluated applications circulatory respiratory functions for table tennis students in Sports coaching faculty of Hochiminhcity University of Sport (USH)

### METHODS:

#### Subjects:

8male table tennis students (ages 21±1.21yrs; body weight 54.46±6.63kg and body height: 165±2.98cm) in course 36 of Sports coaching faculty of Hochiminh cityUniversity of Sport (USH) participate in this study.

#### Methods:

Metamax 3B system with the processes Bruce treadmill test. Athletes perform tests on the tape runs to the end of the ability to perform (test run near the maximum on the treadmill in the laboratory), intensity achieved gradually raise every 3 minutes/level, through increased speed (km/h) and slope (%) of the treadmill according to the table 1.

#### Process:

+ Metamax 3B system is calibrated before the test with a minimum duration of 15 minutes (the ideal time is 30 minutes before the test).+ Athletes wear analysis equipment Metamax 3B and Polar watches to measure the heart rate of the body.+ Treadmill is set initial test subject athletes to speed is 2.74km / h and 10% slope.+ Athletes try to experiment until can not guarantee the speed regulation, inspection is stopped relaxed mode switch (speed descending down).+ Test results performed by software Metamax 3B through detailed analysis of collected gas exchange (O<sub>2</sub>, CO<sub>2</sub>, HR...)

Table 1.Process test for athletes on a treadmill with a Metamax 3B system

Level	Time (minute)	Speed (Km/h)	Elevation (%)
1	0	2.74	10
2	3	4.02	12
3	6	5.47	14
4	9	6.76	16
5	12	8.05	18
6	15	8.85	20
7	18	9.65	22
8	21	10.46	24
9	24	11.26	26
10	27	12.07	28

## Result

Comparison the circulatory and respiratory function of the male students table tennis, Universities Sports Hochiminh City, with athlete table tennis and athlete badminton Bac Ninh Sports University. Research has evaluated the current status of respiratory function for table tennis students through examination and assessment system Metamax 3B with treadmill. Initially, the study results were obtained on a number of indicators of respiratory function and circulation, through checks on the system Metamax 3B and compare results with other studies, presented in table 2 as follows:

**Table 2.** Comparison the circulatory and respiratory function of the male students table tennis, Universities Sports Hochiminh City, with athlete table tennis and athlete badminton Bac Ninh Sports Univ

Variables		{1}		{2}		{3}		t <sub>1-2</sub>	t <sub>1-3</sub>
		Mean	SD	Mean	SD	Mean	SD		
Heart rate	1/min	165.63	13.15	185.33	12.27			4.24	
BF	1/min	54.15	10.03			40.59	4.06		3.82
VO <sub>2</sub> max	l/min	2.23	0.31	3.16	0.66			8.44	
VO <sub>2</sub> max/kg	ml/min/kg	40.75	1.98	60.2	10.38	42.36	4.21	27.75	2.29*
VCO <sub>2</sub> max	l/min	2.36	0.34	3.14	0.79			6.57	
RER	-	1.06	0.06	1.07	0.1	1.07	0.1	0.54*	0.54*

Note:

{1} Table tennis Student {2} Badminton young athlete {3} Table tennis young athlete

\* Non-significant

The result from table 2 show: Heart rate table tennis students of USH ( $\bar{X}$  =165.63) with lower heart rates than young athletes badminton ( $\bar{X}$  =185.33) and differences were statistically significant with  $t_{1-2}$  = 4.24,  $p < 0.01$ . BF comparison of table tennis students with athlete table tennis and differences were statistically significant with  $t_{1-3}$  = 3.82,  $p < 0.01$  (athletes in 1 minute respiratory frequency was 40.59 times, while students need to 54.15 times). With RER of table tennis students compared to badminton and table tennis athletes no difference with  $t = 0.54$ ,  $p > 0.05$ . But badminton athletes ( $\bar{X}$  =3.16) have the ability to absorb maximum oxygen than table tennis students ( $\bar{X}$  =2.23) and differences were statistically significant with  $t_{1-2}$  =8.44,  $p < 0.001$ ; Moreover, VO<sub>2</sub>max/kg of table tennis students ( $\bar{X}$  =40.75) lower than table tennis athlete ( $\bar{X}$  =42.36) but non-significant with  $t_{1-3}$  = 2.29,  $p > 0.05$ , however, when compared VO<sub>2</sub> of table tennis student with badminton athletes ( $\bar{X}$  =60.2), differences were statistically significant with  $t_{1-2}$  = 6.57,  $p < 0.001$ .

Compare circulatory and respiratory function of the male students table tennis, Universities Sports Hochiminh City, with sport students of Bac Ninh Sports University.

Researchers have compared the results obtained with the study of sport students of Bac Ninh Sports University, presented in table 3 as follows:

Table3: Compare circulatory and respiratory function of the male students table tennis, Universities Sports Hochiminh City, with sport students of Bac Ninh Sports University.

Variables		{1}		{2}		{3}		t <sub>1-2</sub>	t <sub>1-3</sub>
		Mean	SD	Mean	SD	Mean	SD		
BF	[l/min]	54.15	10.03	41.5	11.58	48.08	6.97	3.57	1.71*
V'E	[l/min]	72.06	8.50	73.6	10.83	71.6	17.48	0.51*	0.15*
V'O <sub>2</sub>	[l/min]	2.23	0.31	2.4	0.45	2.31	0.99	1.52*	0.69*
V'CO <sub>2</sub>	[l/min]	2.36	0.34	2.65	0.55	2.45	1.13	2.45	0.76*
V'O <sub>2</sub> /kg	[ml/min/kg]	40.75	1.98	37.5	8.96	39	10.51	4.64	2.49
V'O <sub>2</sub> /HR	[ml]	16.20	6.45	13.88	2.74	13.02	5.29	1.02*	1.39*
RER	-	1.059	0.06	1.1	0.14	1.06	0.19	1.98*	0.06*

Note:

{1} Table tennis Student {2} Bac Ninh Sport University Student (Circle sport) {3} Bac Ninh Sport University Student (non-circle sport)

\* Non-significant

The result from table 3 show: RER, VO<sub>2</sub>/HR, VO<sub>2</sub>, V'E index of table tennis students compare with students in Bac Ninh University of Sports, non-significant with p>0.05. BF index of table tennis students compare with Bac Ninh Sport University Student (Circle sport) differences were statistically significant with t<sub>1-2</sub> = 3.57, p<0.01 (Bac Ninh Sport University Student (Circle sport) in 1 minute respiratory frequency was 41.5 times, while students need to 54.15 times). CO<sub>2</sub> elimination ability of table tennis students compared to athletes Bac Ninh Sport University Student (Circle sport) differences were statistically significant with t<sub>1-2</sub> = 2.45, p<0.005. Therefore, the ability of table tennis students to lower CO<sub>2</sub> emissions compared with Circle sport students. However, The amount of oxygen student table tennis than Bac Ninh Sports University students did non-significant. But VO<sub>2</sub>/kg of table tennis students compare with Bac Ninh Sport University Student, differences were statistically significant with p<0.05; In other words, in the same body weight USH table tennis students need more oxygen Bac Ninh Sports University students.

Thus, the ability of the circulatory and respiratory function USH table tennis male students through a number of indicators on the system test Metamax 3B, is somewhat less than that of male students sports And Cycle Cycle Bac Ninh Sports University

### **Conclusion**

Through Test On The System Metamax 3B, The Maximum Ability To Absorb Oxygen Badminton Athletes (Mean = 3.16) Than Those Table Tennis Students USH (Mean = 2.23).With The Ability To Absorb VO<sub>2</sub>/Kg, The Tennis Students USH (Mean=40.75) Lower Than Table Tennis Athlete (Mean = 42:36) And Badminton Athlete Of Bac Ninh Sport University,That Showed That Aerobic Ability Of Table Tennis Students Still Weak.The Study And Practice Of The USH Students Need To Have A Consistent Exercise Program For Each Academic Content Of Each Semester. Aimed At Comprehensive Development Of Students And Equipped With The Skills Necessary For A Teacher And Coach Future.

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## **Evaluation of the teaching skills of the seniors of the Gymnastic Department after the internship at The University of Physical Education and Sports of Bac Ninh**

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### **Abstract:**

Applying teaching skills improvement methods on students through multiple comparison to different objects and evaluating the students' teaching skills after the internship in Gymnastic Department at The University of Physical Education and Sports of Bac Ninh.

Keyword: Teaching capabilities, teaching internship, students, Physical Education etc

### **Introduction**

To a teacher, teaching skills are the premise of evaluating and accumulating professional capacity (Biggs, 2011; Kagan, 1992). Improving students' teaching skills is an important mission that the Gymnastic Department is carrying out so that the seniors can have a good preparation for their future career.

### **Methods**

- Analyzing and accumulating documents in order to determine the theoretical background of the research.
- Interview method: Interviewing the teachers of the subject (n=12) to determine the methods to improve the teaching skills of the students of the Gymnastic Department. At the same time, conducting interviews with the students who are directly taught by the interns (n=280) in order to objectively evaluate the interns' results.
- Expert method: The assessors are the Council of Physical Education Teachers with 12 members. The contents of the evaluation would be a lesson of a physical exercise chosen by the student who is being evaluated and an exercise game. The ones being evaluated are 46 seniors of the Physical Education department. Among these 46 students, 20 are interns at the Physical Education Department (Group 1) and 26 others who are interns at other facilities. Each criteria is divided into different levels: Excellent (from 9 points to 10 points), Good (7p-8p0), Average (5p-6p), Bad (3p-4p), Very Bad (<3p).
- Mathematical statistic method to process the numerical data collected through the interviews.

### **Results and discussion**

**1. Researching teaching skills improvement methods for the seniors of the Physical Education Department.**

To research this matter, we have a discussion with the department head, the vice department head and the teachers in charge of improving teaching skills for students. According to the information, the Gymnastic Department has established a teaching skills improvement process for the seniors, consisting of 3 phases: Preparation before internship, Start of the internship, The end of the internship. Each phase has different methods and each method has its own purpose, content and process. To be specific:

- Before internship (5 methods): 1. Evaluating the real teaching skills of the subjects; 2. Improving the skills of making schedule, teaching plan and outlines; 3. Improving teaching methods in physical education classes; 4. Improving the class organizing and managing skills; 5. Teaching practice with groups of classmates.
- During internship (3 methods): 1. Settling organization and management; 2. Improving students' teaching skills; 3. Increasing checking and evaluating teaching quality.

- End of internship (2 methods): 1. Evaluating the students' teaching skills after the internship; 2. Accumulation after the internship and evaluation.

Evaluating the teaching skills of the seniors of the Gymnastic Department after their internship at The University of Physical Education and Sports of Bac Ninh

Evaluating the students' teaching skills through 3 channels: 1. Comparing their teaching skills before and after the internship (n=20); 2. Students' evaluation about the interns (n=280); 3. Comparing the teaching skills of the interns at the department and the interns at other facilities (n=26)

2.1 Comparing teaching skills of the seniors of the Gymnastic Department of the University of Physical Education and Sports before and after the internship

We use the expert method to evaluate the teaching skills before and after the students' internship at the department. The criterion of the evaluation consist of 3 groups of skills (Behaviors, Teaching, Organization and management). There are 23 criterion in total.

**Table 1.** Evaluating the teaching skills of the seniors of the Gymnastic Department of The University of Physical Education and Sports of Bac Ninh before and after the internship.

Order	Criterion	Before internship	Level	After internship	Level	Statistical difference	
		$\bar{x}$ (mark) $\pm$ $\sigma$		$\bar{x}$ (mark) $\pm$ $\sigma$		t	p
I	Behavior skills along with attitudes toward students						
1	Feeling when going to class	6.12 $\pm$ 2.44	Average	8.36 $\pm$ 2.28	Excellent	2.806	<0.01
2	Expression	5.55 $\pm$ 2.62	Average	7.26 $\pm$ 2,23	Good	2.672	<0.05
3	Manners in class	6.11 $\pm$ 1.79	Average	7.22 $\pm$ 1.88	Good	2.041	<0.05
II	Teaching skills						
	- Lessons contents						
4	Proper, scientific and realistic teaching plans	4.12 $\pm$ 2.21	Bad	7.45 $\pm$ 2.34	Good	2.442	<0.05
5	The contents are suitable for the program, the progress and the outlines of the lessons.	5.86 $\pm$ 1.29	Average	8.06 $\pm$ 1.63	Excellent	2.832	<0.01
6	Ensure that the lessons are systematic, clear, and focus-oriented	4.08 $\pm$ 1.62	Bad	7.88 $\pm$ 1.54	Good	2.864	<0.01
7	Suitable with real conditions and educational purpose.	4.15 $\pm$ 0.86	Bad	7.05 $\pm$ 1.46	Good	2.893	<0.01
	Teaching methods						
8	Suitable methods for the lessons and the students	4.15 $\pm$ 1.21	Bad	8.22 $\pm$ 1.43	Excellent	3.398	<0.001
9	Diverse teaching methods	3.18 $\pm$ 2.10	Bad	7.06 $\pm$ 2.10	Good	2.637	<0.05
10	Follow the order of the teaching plans	5.18 $\pm$ 1.50	Average	8.06 $\pm$ 1.61	Excellent	2.374	<0.05
11	Suitable position, clear explanation	4.01 $\pm$ 2.11	Bad	7.39 $\pm$ 2.33	Good	2.849	<0.01
12	Proper, accurate, nice movements	4.39 $\pm$ 1.22	Bad	7.59 $\pm$ 1.40	Good	3.463	<0.001
13	Emphasizing the technical main points of the excercises	5.15 $\pm$ 1.66	Average	7.06 $\pm$ 1.46	Good	2.432	<0.05
	Tools						

14	Good preparation for the field and teaching tools	6.11± 0.87	Average	8.41± 0.79	Excellent	2.061	<0.05
15	Good utilization and combination of the tools in order to complete the lessons	4.42± 1.33	Bad	6.72± 1.63	Average	2.089	<0.05
	<i>- Organization and Management</i>						
16	Be flexible in organizing classes and in managing time in each stage and in the whole teaching plan.	3.61± 1.08	Very Bad	7.52± 1.08	Good	3.104	<0.01
17	Serious and scientific classes management	4.17± 1.33	Bad	6.48± 1.54	Average	2.451	<0.05
18	Make sure that most of the students understand the main points of the lessons and meet the requirement of the teaching plans.	4.76± 1.03	Bad	7.65± 1.15	Good	2.982	<0.01
III	<b>Communication organization skills</b>						
19	Clear, short, understandable delivering skills and proper usage of professional terms	4.53± 1.51	Bad	7.72± 1.43	Good	2.68	<0.05
20	Organize and make the students become active, positive and voluntary in learning. Make learning appeal to different kinds of students.	3.27± 2.3	Bad	6.46± 2.2	Average	2.63	<0.05
21	Answer the questions passionately	5.28± 1.45	Average	7.36± 1.66	Average	2.64	<0.05
23	Get the responses from learners in time	4.25± 1.46	Bad	7.36± 1.53	Average	2.83	<0.01

From the table, we can see that the teaching skills of the seniors of Gymnastic Department of The University of Physical Education and Sports of Bac Ninh before the internship cannot meet the Good or Excellent level in 23/23 criterion. Only 8/23 criterion get the Average level and 17/23 are at Bad level. However, after the internship, the average marks of the group increase significantly with 5/23 criterion meet the Excellent level, 3 at Average and the other 17 criterion meet Good level. The difference between before and after the internship is highly reliable with the rate from  $P < 0.05$  to  $P < 0.001$ . It proves that the teaching skills improvement methods of the department have really helped increase the students' teaching skills.

## 2.2 Students' evaluation about the interns

To solve the above problem, we collect and analyze the evaluation results from 280 students about 20 interns. The interview form consists of 7 criterion and each criteria has its own specific contents of evaluation. There are 4 levels and the interviewees choose the suitable results. The final statistics are presented in table 2

**Table 1.** Students' evaluation about the interns in Physical Education

Criterion	Content	Classification							
		Excellent (9-10đ)		Good (7-8đ)		Average (5-6đ)		Bad Very Bad<5đ	
		N	%	n	%	n	%	n	%
Teaching attitude	Mood in classes	121	43.21	159	56.78	0	0	0	0
	Expression	54	19.28	226	80.71	0	0	0	0
	Be stylish	48	17.14	174	62.14	58	20.71	0	0
Teaching Organization	Getting the students' attention	36	12.85	175	62.5	79	28.21	0	0
	Making students excited during classes	27	9.64	121	43.21	104	37.14	28	10
Teaching language	Proper language	25	8.9	206	73.57	49	17.5	0	0
	Speech speed	18	6.42	262	93.57	0	0	0	0
	Attractive tone	18	6.42	164	22.85	98	35	0	0
	Usage of professional terms	18	6.42	116	41.42	129	46.07	17	6.07
	Expressing the purpose of the lessons	20	7.14	137	48.92	87	31.07	36	12.85
Teaching methods	Understanding the special treatment method	65	23.21	188	67.14	27	9.64	0	0
	Teaching methods (diverse or rigid)	14	5	103	36.78	163	58.21	0	0
	Progressing step by step	46	16.42	154	55	41	14.64	39	13.92
Moves examples	Proper and accurate examples	81	28.92	199	71.07	0	0	0	0
	Technical points reminding	116	41.42	164	58.57	0	0	0	0
Interaction between teachers and students	Answering questions	47	16.78	237	84.64	0	0	0	0
	Discussion	37	13.21	165	58.92	78	27.85	0	0
Effects	Improving techniques and skills	47	16.78	153	54.64	80	28.57	0	0
	Improving students' self-study skills	0	0	94	33.57	186	66.42	0	0
	Successfully delivering the lessons to the students	0	0	145	51.78	135	48.21	0	0

In general, most of the interns are evaluated as Good, Average or Excellent by the students. Only some contents are evaluated as under Average. 5/19 criterion are Excellent; 15/19 are Good. The number of students who evaluate interns as Good and Excellent is greater than those who give Average and under Average results. This proves that the interns' skills relatively meet the requirements of teaching.

2.3 Comparing the teaching skills of interns at the department and interns other facilities.

To evaluate the difference in teaching skills between the interns at the department and those at other facilities, we compare the results after the internship of those at the department (n=20) and those at other facilities (n=26). The contents and the criterion of the evaluation are the same as before the internship. The statistics show that there are only 5 among 23 criterion that have no difference between the two groups. They are: Mood in classes; Expression, Manners in classes, Progress of teaching, Answer questions passionately. The other 28 criterion show the overwhelming results of the interns at the department. Reality check proves that if Physical Education students' teaching skills are actively and properly improved by the department, their skills will surely increase.

### **Conclusion**

1. After the internship at the department, the teaching skills of the seniors of the Physical Education department increase significantly. This is shown through their behaviors, teaching skills and other organization and communication skills also become better than before the internship
2. The results also show that the interns at the department's teaching skills have changed in a positive way in comparison to other different methods and subjects. This proves that the effects of the improvement in Physical Education during the internship are important in forming the seniors' teaching skills.

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## **Effect of applied exercises on speed of step-up punch technique in Karate do students in Hochiminh city University of Sport**

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### **Abstract**

The purpose of this study was to assess the effect of applied exercises on speed of step-up punch technique in karate. 28 student participants were divided into two groups, a control group of 8 students is the elite athletes and 10 student in experiment group is the normal athletes. Using 3D motion analysis technology to determine the biomechanical factors of step-up punch technique. 20 Karatedo exercises includes 8 singular exercise, 3 combination exercises, 5 attack exercises to target, 4 reaction exercises were applied with the number of repetitions, sets and resting in 12 weeks. Subjects trained 3 sections per week with 4 exercises in 30 mins per section. Results showed that the experimental group had biomechanical variables lower than the group of elite athletes, as well as slower speed step-up punch. After 12 weeks of application 20 exercises, the experimental group had improved clarity and access to elite athletes group. All the variables of kinematic factor of step-up punch had higher after experiment such as angular velocity increased from 16.72% to 27.22%, and the speed of punch increased 26.64%. This has confirmed the effectiveness of the chosen exercises.

Keywords: 3D motion analysis, step-up punch, karate do

### **Introduction**

Technical characteristics of Karate do competition is played in a relatively short time, only 3 minutes for senior competitor. Athletes who want to get points, they must to be done the attack and counterattack very fast and accuracy. There are many techniques in karate do competition were used however punch step-up techniques is one of technique that athletes were performed to get points because of its effectiveness in attack as well as defense-attack combination. The punching techniques in Karatdo competition depend on the linear distance and speed (resultant direction in 3D space) to score. Douglas (2013) was investigate the reverse and leading punch by using 3D motion analysis technique. Vidranski, Sertic & Jukic (2015) was also used 3D technology to investigate the technical and tactical aspects that differentiate winning and losing performances in elite male karate athletes. Quinzi et al (2016) had study the repeated kicking actions in karate through the technical execution in elite athlete. The limitation of studies focused on the investigation of the cause of observed performance. However the limitation that the findings may be due to the small homogenous groups of elite Karateathletes (Hofmann et al., 2008; Vences Brito, Ferreria, Cortes, Fernandes, & Pezarat-Correia, 2011). There is lack of topic mentioned punch step-up techniques and how to improve the speed to perform this technique especially to identify the biomechanical factors.

### **Methods**

Subjects: 18 male Karate do students of Physical Education faculty in Hochiminh city University of Sport participated in this research was divided into two groups. The control group contains 8 students is elite karate do athlete (G1) and the experiment group contains 10 students is a normal athlete (G2). Each subject gave informed consent approved by the Academic Committee of Hochiminh city University of Sport.

### Data Collection:

Testing was completed in June 2012 and conducted in the Biomechanics Laboratory at Hochiminh city University of Sport. Data collection was performed individually for each subject and took one hour to complete. The performance of all trials was not considered fatiguing for all trained subjects. Order of performance for the techniques was not a factor in results. Each subject was fitted with 28 reflective markers covering the whole body. Data capture began as the stimulus light was lit. Subjects were asked to perform a lead punch as they recognized the stimulus light. The procedure for punch capture is repeated for five successful trials of punch step-up.

**Filming Protocol:** A four-camera infrared system from the 3D simi motion analysis was used to track markers in three-dimensional space. Cameras capturing movement at 120 frames per second allowed for motion analysis.

**Digitizing:** Data was processed and digitized using the 3D simimotion analysis system. Data was smoothed filter at 12hz cutoff frequency.

**Experiment:** 20Karate exercises includes 8 singular exercise, 3 combination exercises, 5 attack exercises to target, 4 reaction exercises were applied with the number of repetitions, sets and resting in 12 weeks. Subjects trained 3 sections per week with 4 exercises in 30 mins per section.

**Statistical Analysis:** Descriptive statistics of means and standard deviations for each variable were calculated. Paired t test for paired samples and Independence t test were used for determining the significance of variable difference scores and between two groups. All statistics were calculated using Microsoft Excel.

### Results



Fig 1. Orbital motion of the foot



Fig 2. Orbital motion of the punch out stage



Fig 3. Orbital motion of the pull back stage.

Table 1. Velocity of variables of Step-up punching prior experiment

Variables	Control group (n=8)		Experiment group (n=10)	
	Mean	SD	Mean	SD
Angular velocity of ankle of backleg (rad/s)	545.22	39.50	396.01	38.25
Angular velocity of knee of backleg (rad/s)	60.57	7.59	46.69	9.46
Angular velocity of hip (rad/s)	114.78	5.99	74.20	23.30
Angular velocity of ankle of foreleg (rad/s)	346.54	34.94	257.15	58.53
Angular velocity of knee of foreleg (rad/s)	253.43	17.41	204.88	12.95
Angular velocity of elbow of punch-hand (rad/s)	897.72	69.91	619.15	78.84
Velocity of hip of body lateral axis (m/s)	1.37	0.07	0.98	0.07
Velocity of back leg of body lateral axis (m/s)	4.80	0.20	3.47	0.10
Velocity of punch of body lateral axis (m/s)	5.99	0.35	3.78	0.24

The result in table 1 shows that the velocity of step-up technique in control group is faster than experiment group, and it can be seen clearly through the variables of this technique. All of variables in control group is higher than experiment group significantly with  $p < 0.05$ . The velocity of punch in G1 is  $5.99 \pm 0.35$  m/s compare to  $3.78 \pm 0.24$  m/s in G2 and the moving of their leg is associated with velocity of punch. The angular velocity of G1 is faster than G2 means the explosive strength of lower limb of elite Karatedo athlete better than normal athlete such as angular velocity of ankle, knee in both back-leg and foreleg are more faster. It can be found the similar thing in velocity angular of elbow of punch and the velocity of punch. The value of velocity of hip and leg of body lateral axis also were found higher in G1 compare to G2. It is indicated that the ability to perform step-up technique in elite Karatedo athlete better than normal athlete. And we need the information how the velocity of step-up technique will be changed after experiment in group 2.

Table 2. Velocity of variables of Step-up punching after experiment in group 2 (n=10)

Variables	Prior experiment		After experiment		W%
	Mean	SD	Mean	SD	
Angular velocity of ankle of backleg (rad/s)	396.01	38.25	497.98	48.32	22.81
Angular velocity of knee of backleg (rad/s)	46.69	9.46	56.80	6.41	19.55
Angular velocity of hip (rad/s)	74.20	23.30	93.87	14.93	23.41
Angular velocity of ankle of foreleg (rad/s)	257.15	58.53	338.19	24.22	27.22
Angular velocity of knee of foreleg (rad/s)	204.88	12.95	242.26	12.10	16.72
Angular velocity of elbow of punch-hand (rad/s)	619.15	78.84	791.88	64.53	24.48
Velocity of hip of body lateral axis (m/s)	0.98	0.07	1.31	0.07	29.34
Velocity of back leg of body lateral axis (m/s)	3.47	0.10	4.62	0.22	28.53
Velocity of punch of body lateral axis (m/s)	3.78	0.24	4.94	0.41	26.64

The result in table 2 shows that the of step-up technique after experiment is faster clearly, and all of variable were elevated significant with  $p < 0.05$ . The growth rate is quite high after experiment as follows: angular velocity of ankle of backleg and foreleg increased 22.81% and 27.22%, angular velocity of knee of backleg and foreleg increased 19.55% and 16.72%, angular velocity of elbow increased 24.48%, the velocity of hip, backleg and punch of body axis increased from 26% to 29%. Whether the development of the experimental group is not equal to the elite athlete group but it shows very good development. Results demonstrate that the variables were approaching the elite athletes. This proves that 20 applied exercises was positive effect, it was caused to improve the execution speed of step-up punch technique.

The previous studies show that the peak angular speed of the action completed around the longitudinal axis of the segment (arm internal rotation and forearm pronation) happened follows the action executed around the lateral axis (arm flexion and forearm extension). Finally, the forearm extension approached a peak angular speed than the arm flexion, requiring the speed transference from the proximal arm to the distal during action (Van Gheluwe and Hebbelink, 1985; Putnam, 1993; Hirashima et al., 2002). The result may increase velocity and power on the punch execution. However, the behavior was not found for arm internal rotation and forearm pronation. The peak angular speed of each segmental movement shows associate in the time of muscle peak activity sequence. Mean why, internal rotators which reached its peak before contact the target, and before the peak angular speed, respectively, of the arm flexion and internal rotation. Compared with the results from Hoffman, Witte & Emmermacher (2008) and Vences Brito et al (2011) the result of this study showed a lower than international Karatedo athletes level.

## Conclusion

The study has evaluated the effect of the applied exercises to develop the speed of step-up punch technique. The results show that 20 exercises was a positive effect to make the speed of step-up punch increase. All the variables of kinematic factor of step-up punch had higher after experiment such as angular velocity increased from 16.72% to 27.22%, and the speed of punch increased 26.64%. This has confirmed the effectiveness of the chosen exercises.

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## **Factors influencing fully immunization coverage among children aged 12-23 months in Mareka district, Dawuro zone, Southern nation nationalities and people's regional state, Ethiopia, 2016**

**Damene Darota, Kassa Daka, Wolde Facha**

### **Abstract**

Nearly half (50%) of children was fully vaccinated and the rest are at risk for vaccine-preventable morbidity and mortality. To address the problem effectively, up-to-date, comprehensive information on coverage and factors that are associated with child immunization at district level is needed to reduce child morbidity and mortality. The objective of this study is to assess factors influencing fully immunization coverage among children aged 12-23 months in Mareka district, Dawuro Zone, South Ethiopia. A community-based cross-sectional study design with multistage, cluster sampling approach was employed. A quantitative method of data collection was used. A total of 616 study participants were recruited for the study. Data were collected using pretested structured questionnaire by interviewing index children's mothers/caregivers, collected from vaccine card, observing BCG vaccine scar through house-to-house visits and by reviewing EPI facility registration. More than three-fourth, 473 (76.8%, 95 CI: 73%, 80 %) of the children aged 12 to 23 months were fully vaccinated by card, reviewing from EPI registration plus history. Factors significantly associated with full vaccination were mothers age [AOR=2.57, 95 % CI:(1.14,5.99)], being housewife mother [AOR=1.72; 95 % CI(1.132, 4.15)], place of delivery [AOR=1.43 ; 95 % CI(1.104,2.33)], post natal care [AOR= 1.63; 95 % CI(1.05,2.63)], mothers knowledge regarding period of immunization completion [AOR = .39; 95% CI:(.14,.67)] and static immunization serving strategy [AOR=.467; 95% CI: (.24,.91)]. It is very important that local intervention such as sustained health education related to the importance of immunization will be needed. Improving skilled institutional delivery and postnatal care should also get emphasis to improve children's immunization coverage. Furthermore, more focus should be given on outreach services.

**Key Words:** Coverage, Children, Fully immunization, Immunization

### **Introduction**

Globally, EPI was established to ensure efficient and effective delivery of vaccines to all eligible children. To benefit its full potential, WHO suggests that complete vaccine coverage should reach at least 90%, to reduce two million deaths a year which is prevented by immunization among children under age of five (1). But there are still millions of people who do not benefit from the protection that vaccination provides. In 2013, about 17,000 children under 5 died every day and 1.5 million unvaccinated children die each year in the world as a result of vaccine preventable diseases (2). Global immunization coverage by the year 2013 was 90% with BCG and 84 % with DPT3, OPV3 and measles vaccines (3). Despite major progress, the full potential of immunization continues to elude many of the world's children. Furthermore, eligible children who did not receive DPT1, DPT3 and measles were 12.2 million, 21.8 million and 21.6 million respectively by 2013 (2). Recently in 2014, about 18.7 million infants worldwide were not received routine immunization services. Such an ambitious variation is far beyond the actual reach of full potential to those most vulnerable groups of children in most developing countries for several reasons resulting from limited resources, competing health priorities and poor management of health systems (4). The goal of EPI in Ethiopia was to achieve at least 90% national vaccination coverage with Pentavalent3, measles and fully immunized child (5). However, more than half million children in Ethiopia are unvaccinated with DPT 1 and around 1 million children dropped out before DTP3 in 2013 (3). Reports show routine immunization coverage reached 80 % with BCG, 66 % with DPT3 vaccine, and full immunization coverage with 50 % in 2014 and still half of the children remain not full-immunized (6).

Therefore, more detailed, up-to date and comprehensive information at district level is needed in order to develop and implement appropriate strategies for improving immunization coverage. Thus, the aim of this study was to determine fully vaccination coverage and associated factors among 12-23 months of children in Mareka district.

## **Methods And Materials**

The study was carried out at Mareka district, which is located 550 Km's south from Ethiopian capital, Addis Ababa. The total population of the district was 145,955 with 73,269 (50.2%) are females, 72,686(49.8%) are males (7); with 4378 (3%) children aged 12-23 months. A community based cross-sectional study design was conducted from March 2 to April 8, 2016. All children aged 12-23 months with their mothers (caregivers) living in Mareka district included in the study. The sample size was calculated using 24% of prevalence of fully immunization coverage among children of 12-23 months EDHS, 2011 (8) and assumptions of 95% level of significance, 5% margin of error, design effect of 2.0 and non response rate of 10%. The estimate which yielded the highest number was considered as a final sample size. Hence, the largest sample size, 616, was taken for better representativeness and enough power to detect all associated factors. Structured questionnaire adopted from various literatures such as 2011 EDHS ,WHO EPI cluster survey manual was used to collect data(8, 9).

### *Ethical Considerations*

Ethical clearance was obtained from Research Ethical Review Committee of College of Health Sciences and medicine of Wolaita Sodo University. During data collection process, the data collectors were informed to mothers/care givers about the aims of the study. Oral consent was obtained for their willingness for participation.

## **Results**

### *Socio-demographic characteristics of study participants*

A total of 616 mothers or caregivers of children aged between 12 to 23 months were participated in the study making a response rate of 100%. Out of total study participants, 607 (98.5%) were mothers of the children and 9(1.5%) were caregivers. Majority of the interviewees 416 (67.5%) were aged between 25 and 34 years. About 294 (47.7%) of mothers did attend primary education and majority of mothers (95.0%) were married. The mean age of the mothers or caregivers was 29.1. From a total sampled children in the study, 284 (46.1%) were females and 332 (53.9%) were males.

### *Vaccination coverage*

Based on the vaccination card, reviewing from health facility EPI registration and respondents report, about 473 (76.8%, 95 CI: 73%, 80 %) of children completed all the recommended vaccines and 141(22.9%) are partially vaccinated, where as 2 (0.3%) having never been vaccinated. According to our findings, polio is the most frequently received vaccine. The result revealed that 565 (91.7%) received BCG, 590 (95.8%) received pentavalent 1/OPV1/PCV1, 575 (93.4 %) received pentavalent 2 / OPV2 / PCV2, 89.9% received pentavalent 3/ OPV3/PCV3, 529 (85.9%) received measles vaccine while Rota 2 ,437 (70.9%) was the least received vaccine reported among respondents when compared with other vaccines. Among the children those who have no card 176 (28.6%) had BCG scar. TT vaccination coverage among respondent's mothers was 139 (22.6 %) while TT2+ coverage was 130 (22.1%) during the last pregnancy. Vaccination reduction has been recorded from first to second and third doses of polio, pentavalent, PCV and Rota vaccines. Pentavalent 1 to pentavalent 3 was 6.3 % followed by BCG to measles dropout rate of 6.4 % during the study period.

### *Factors associated with fully immunization status*

Mothers' age, occupation, postnatal attendance, and knowledge of immunization completion period were significantly associated with fully immunization coverage. In children with mothers/care givers age above thirty-five was 2.57 times more likely fully immunizing their children than ages lower than 35. Children with maternal occupation as being house wife were 1.7 times more likely to fully vaccinated than employed. Mothers who had attended post natal care were also 1.6 times more likely to be fully vaccinated their children than mothers who do not attend. Furthermore, more than three-fourth (80.50%) of children who had been delivered in health institution were found to be fully immunized as compared with 73.66 % of children those delivered at home.

## Discussion

This study identified more than three fourth (76.8%) of children are fully vaccinated. When we compare fully vaccination coverage of study district with EDHS 2011 of SNNPR, the percent of fully vaccinated is higher. The possible explanation might be due to EDHS 2011 report included data from areas of inaccessible for immunization. The immunization coverage of penta-3, measles and fully immunized in Mareka district is higher than the immunization coverage reported in 2011 nationwide (8). The coverage of fully vaccinated reported in this study was also lower than the district health office report of 2015, which was 84% (10,11).

Furthermore, the most frequently received vaccines were OPV 1, pentavalent 1 & PCV1 (95.8%) ; but only 437 (70.9 %) reported they took Rota 2 vaccination. Rota vaccine coverage was lower than the coverage of the other vaccine which is given in line with EPI schedule of Ethiopia. The possible suggestion might be related to suboptimal information, education and communications activities around the new vaccine introduction in the district (9). On the other hand, OPV & pentavalent vaccine coverage was higher than measles vaccine coverage. The variation in coverage might be as a result of time interval of duration between two vaccines in which mothers may forget the measles vaccine and dropout from the consequent doses.

According to the present study about 473 (76.8%) complete recommended doses of immunization. This finding is comparable with the finding of Sinana (76.8%) (12), Arbaminch (73.2%) (13) , district of Tawau, East Coast of Sabah (75.1%) (14) and Lao People's Democratic Republic (80.8%) (15), but this disagrees with coverage recorded in Hosana (30.5%) (16), Ambo(35.95%) (17), Southwestern Ethiopia (37%) (18), North West Ethiopia (49.3%) (19) , Nigeria (22%) (20), Burkinafaso (50.2%) (21) but lower than that of Dschang , western region of Cameroon (85.9%) (22) and Nigeria (84.9%) (23). The variation in the coverage of current and previous studies were might be attributed to the difference in time duration of year, awareness of mothers and providing information on immunization could be changed over time and accessibility of health facility. On the other hand, the percentage of not fully vaccinated children is agrees with previous studies of Ambo(17), Sinana (12) and Arbaminch (13) , but higher than nationwide (8) and Cameroon(22).

Among socio-demographic characteristic that show significantly associated with completion of child immunization was mother's age. In children with mothers/care givers age above 35 was 2.57 times more likely immunize their children [AOR= 2.57, 95 % CI (1.14, 5.99)]. This is interrelated with finding from Jigjiga district (24) , Lao District (10)and Cameroon (22). The possible suggestion might be the related to repeated experience mothers care for previous children and healthy seeking behavior mothers developed throughout their life.

Another socio-demographic characteristic of the respondents which was significantly associated with completion of child immunization was maternal occupation. In thus children with maternal occupation as being house wife were 1.7 times more likely to fully vaccinate than employed [AOR= 1.72; 95 % CI (1.132, 4.14)]. This finding agrees with the study done in Sinana, Hosana and Nigeria (12, 23) maternal occupation as significant factors associated with fully vaccination status.

Fully immunization was also found to have a significant association with the outreach serving of immunization. According to Ethiopian government immunization services are provided in most of the health facilities as an outreach service for communities residing beyond 5 km from the static health facilities (5). The probability of a child to be fully vaccinated was decreases by 0.47 when the health workers provide vaccination in health facility [AOR=0.47, 95% CI (.24, .93)]. This is in line with the study done in Jigjiga district of Ethiopia (24) , Murshidabad district of West Bengal (33) and Kabul, Afghanistan (25) in which out rich EPI site provision provides more opportunity to complete immunization.

## 5. Conclusion

More than three-fourth (76.8%, 95 CI: 73%, 80 %) of children were fully vaccinated, but still it is below governmental plan (90%) target necessary for sustained control of vaccine preventable diseases with all vaccines given to targeted children. Maternal age, maternal occupations, place of delivery, post natal care utilization, immunization serving strategy and mothers' knowledge of age to finishes for immunization were significant factors associated with fully immunization of children. Family problem including maternal sickness /caregiver sick, unaware/unknown of 2nd or 3rd doses and need of immunization, unknown time/place of immunization, child sick , inconvenient vaccination time and mothers being busy with work load were reasons reported among respondents not fully vaccinating their children. To improve immunization coverage in the study area district health office should conduct continuous supervision & periodic evaluation of performance of health workers in the district.

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## Establishing a measuring tool for soft skills of students at University of Sport Hochiminh City

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### **Abstract:**

The aim of this study was establishing a measuring tool for soft skill of students through the open questionnaire, analyzing the reliability of Cronbach's Alpha exploratory factor analysis (EFA), confirmatory factor analysis (CFA). As the result, 16 soft skill for students have been systematically established and a measurement tool has been built. Keywords: soft skill, USH, measuring tool.

### **Introduction**

Along with the rise of socioeconomic conditions –University education of Vietnam is making strong progress. However, besides the achievements, the higher education still exist many shortcomings. Vietnamese students and University of Sport Hochiminh City (USH) students in particular after the learning process at the school, the majority are still being evaluated as weak work skills and more important is weak soft skills. The proof is that students participating in recruitment interviews typically impress recruiters with qualifications, skills or experience working ... skills such as self-control, discipline left index contact, change ownership, ownership lifetime or career goal planning, ... it is still very weak. Being aware that human capacity is assessed on all 3 aspects: knowledge, skills and attitudes. The training, soft skills training for students is really important, but at present there is no tool to measure the soft skills required for each job. Derived from practical needs in the use of social labor and child labor characteristics of our country, especially the workforce in the industry Sports, *Establishing a measuring tool for soft skills of students at University of Sport Hochiminh City* in order to detect, in addition to students with the necessary skills and best for students with learning self-confidence work later .

### **Methodology**

Inspection of Cronbach's Alpha reliability

Used to remove trash before proceeding variable factor analysis. Test the reliability of the variables in the skills system is collected based on Cronbach's coefficient alpha testing of each measurement variable.

Exploring factor analysis (Exploratory Factor Analysis - EFA)

Factor analysis method was used to explore the identified skill groups in toolkits measure soft skills to USH students. EFA analysis methods multivariate analysis group interdependence techniques, meaning no dependent variable and independent variables that rely on correlations between variables together (interrelationship). EFA to a set  $k$  shortened observed variables into a set  $F$  ( $F < k$ ) the more significant factor. The basis of this reduction is based on a linear relationship of the factors with the observed variables. The number of base elements depend on and study the model in which they are bound together by rotating orthogonal vectors to no correlation occurs.

Factor analysis confirmed (Confirmatory Factor Analysis - CFA)

Confirming factor analysis (CFA) is one of the techniques used to test the observed variables (measured variables) represent the factors (constructs) how well. CFA is the next step of the EFA because the CFA is only suitable when researchers have some knowledge of the underlying base structure, in which the relationship or assumption (derived from theoretical or empirical) between the observed variables and factors are the basis, the researchers postulated before conducting statistical tests. CFA method is used to calculate reaffirmed univariate, multivariate, value and differentiated convergence of measurement tools for USH Students soft skills.

### Results and Discussion.

Codified the soft skills needed to USH students

Preliminary studies, the authors build the initial questionnaire table includes 20 soft skills are synthesized by research results from research on soft skills of a number of countries around the world and in Vietnam - studies on soft skills at the University for the students of different objects, combine use open questions to gather the opinions of the object of study of the soft skills needed to USH students.

100 subjects interviewed students, after collecting data, the authors used analytical methods intrinsic reliability (Internal Consistent Reliability Analysis) to analyze the skills to find the skills they need to retain and type removing the unnecessary skills are skills that research into testing. The results from the introduction of open questions in research and statistics are 10 skills.

After the kind of goes with the skills insufficient reliability and added the integrated skills from open-ended questions, research the system is 16 soft skills necessary for USH students as follows:

Table 1: The system of soft skills necessary for USH Students

STT	Content	Source document
1	Learning and self-learning skills	Open question
2	Self-management skills	Open question
3	Listening Skills	Vietnam University of Commerce
4	Adaptation Skills	<a href="http://www.dest.gov.au">http://www.dest.gov.au</a>
5	Communication skills	Open question
6	Presentation skills	Open question
7	Teamwork skills	Open question
8	Time management skills	Open question
9	Skills work with people	<a href="http://www.dest.gov.au">http://www.dest.gov.au</a>
10	Skills use to information and communications technology	<a href="http://www.dius.gov.uk/">http://www.dius.gov.uk/</a>
11	Problem-solving skills	Huỳnh Văn Sơn, 2012
12	Thinking skills and positive behavior	<a href="http://www.dest.gov.au">http://www.dest.gov.au</a>
13	Research skills, science and technology	<a href="http://www.dest.gov.au">http://www.dest.gov.au</a>
14	Decision-making skills	Huỳnh Văn Sơn, 2012
15	Planning skills life goals	Open question
16	Innovative skills and adventurous.	<a href="http://www.acci.asn.au">http://www.acci.asn.au</a>

Establishing a measuring tool for soft skills of students at USH

Research surveyed 500 students to the field via random sampling method non-probability, general information about the sample as follows:

Table 2: General information on sample

	Content	Quantity	Percentage (%)
Gender	Male	395	79.0
	Female	105	21.0
Course	Final year	114	22.8
	Third-year	132	26.4
	Second-year	134	26.8
	Freshman	120	24.0
Major	Physical Education	162	32.4

	Sport Coaching	151	30.2
	Sports Management	153	30.6
	Sport Biomedical Science	34	6.8
Family residence	Northern	47	9.4
	Central	192	38.4
	South	261	52.2

*Inspection of Cronbach's Alpha reliability:* Based on interviews of 500 students on the choice of soft skills, after testing the Cronbach's alpha coefficient, all 16 factors are achieving high reliability coefficients, and well, that is > 0.6. Correlation coefficients are variable total > 0.3 should meet the requirements and are used in the factor analysis (Exploratory Factor Analysis - EFA).

*Exploring factor analysis EFA:* Conducting factor analysis using analytical methods Principal component and method of rotation Varimax, 16 variables were divided into 4 groups with expertise results KMO and Bartlett's test with KMO = 0.814 (> 0.5), Sig = 0.000 (< 0.01). The load factor of each variable is greater than 0.5, with a total variance extracted is 56.5%.

Considering the variables in the table rotation and adjustment factors, only use these variables ensures conditions factor analysis coefficient is a load factor > 0.5 (Hair et al., 2006), the difference between variables > 0.3 and value Sig. (Bartlett's Test) < 0.005. With such reasoning research 16 variables unchanged, the data suitable for factor analysis.

The results showed that four factors EFA formed relationships explain the correlation between the variables in the group, have identified all of this content skill is consistent with research requirements. Based on the research to go ahead, in view of the researcher, research group named the four soft skills are as follows:

Group 1: Study well skills groups in the university environment (Study well).

Group 2: Group basic skills (Basic).

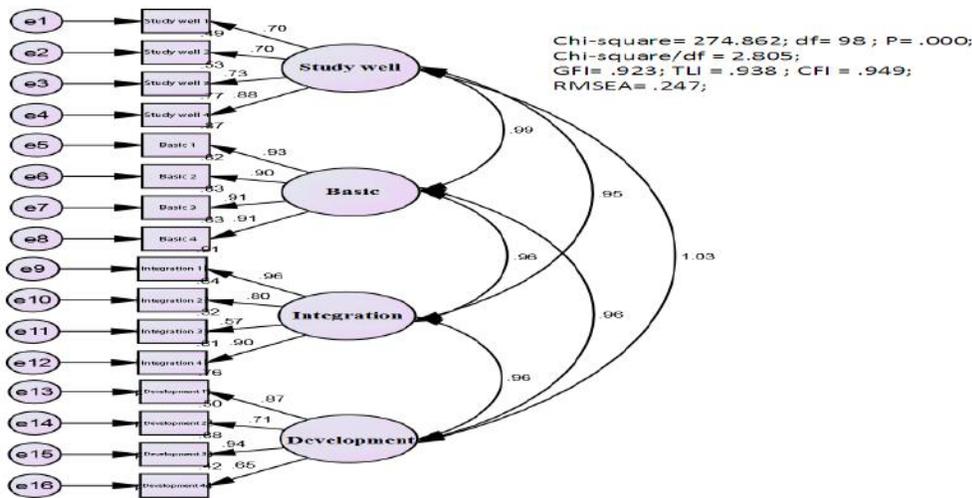
Group 3: Group skills workplace integration (the Integration).

Group 4: Group careers development skills (Development).

Table 3: Results EFA

Encode	Variables	Factor			
		1	2	3	4
Study well 1	Learning and self-learning skills	.565			
Study well 2	Self-management skills	.636			
Study well 3	Listening Skills	.567			
Study well 4	Adaptation Skills	.629			
Basic 1	Presentation skills		.522		
Basic 2	Communication skills		.649		
Basic 3	Teamwork skills		.718		
Basic 4	Time management skills		.728		
Integration 1	Problem-solving skills			.801	
Integration 2	Thinking skills and positive behavior			.739	
Integration 3	Skills work with people			.508	
Integration 4	Skills use to information and communications technology			.693	
Development 1	Research skills, science and technology				.771
Development 2	problem-solving skills and decision-making				.752
Development 3	Planning skills life goals				.713
Development 4	Innovative skills and adventurous.				.767

Factor analysis confirmed the CFA.



**Fig 1: ResultsCFA(standardized)**

CFA results showed that the model has 98 degrees of freedom, the value of Chi-square test = 274 862 with  $P_{value} = 0.000$ ; Chi-square/df = 2805, the index is quite high due to the large study sample size (500 samples) (Nguyen & Nguyen 2008), however this index remains satisfactory because less than 3 (Carmines & McIver, 1981); CFI = 0949 index, TLI = 0938, and RMSEA = 0.247 indicates the model fit the data, and 4 components: Study well, Basic, the Integration, Development and attain the unidirectional.

Weighting variables were standardized observations allowed ( $> 0.5$ ) and statistically significant (p-values are equal to 0.000). Thus, we can conclude the observed variables used to measure four components of the measurement tools are achieving convergence value.

The correlation coefficient between the components with accompanying standard deviation is less than 1, so the ingredients Study well, Basic, the Integration, Development values are achieved distinction.

Table4: The results of the value of distinguishing between components

			Estimate	S.E.	C.R.	$P_{value}$
Study well	<-->	Basic	.254	.022	11.697	***
Study well	<-->	the Integration	.656	.047	13.969	***
Study well	<-->	Development	.489	.035	14.015	***
Basic	<-->	the Integration	.600	.044	13.640	***
the Integration	<-->	Development	.329	.029	11.539	***
Basic	<-->	Development	.258	.022	11.600	***

S.E: The standard error C.R: Critical value

Value and reliability of the scale was assessed by confidence factor synthesis and variance extracted (Table 3.5).

Table 5: Summary of reliability coefficient sum and total variance extracted

Element	Number of observed variables	Reliability	Variance extracted%
Study well	4	0.619	47
Basic	4	0.701	53
the Integration	4	0.709	53
Development	4	0.630	43

The above results show that aggregate reliability coefficients are greater than 0.6 and satisfactory research. Variance extracted of components ranges from 43% to 53%. Including two smaller components that require fine with variance extracted Studies is 47%, component Development with deduction of 43% variance. However we are still in the acceptable values are and still achieve the value of content (Nguyen Dinh Tho and Nguyen Thi Mai Trang, 2009).

So after analyzing the results of the CFA indicate measurement scale for students soft skills HCMC University Sport in 4 ingredients (well Studies, Basic, the Integration, Development) and 16 observed variables, are achieved convergence value, simplicity, value and satisfactory distinction in value as well as reliability.

### **Conclusion.**

The contribution of the study is the system is the soft skills needed for USH students including 16 following skills: learning and self-learning, self-management, listening, adaptation, communication, presentation, teamwork, time management, working with people, using information and communications technology, problem solving, critical thinking and positive behavior, science and technology research, decision making, planning goals life, creative and adventurous. On this basis, the research team developed the measurement tool for soft skills USH student's of 4 components: (1) Study well skills groups in the university environment, (2) Group basic skills, (3) Group skills workplace integration, (4) Group careers development skills. The components of the tool is the basis for the survey and measurement soft skills of students USH and can be used as references for other universities.

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## Comparison Between Sidearm and Overhand Throws in Softball

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### Abstract

The good throws need acceleration, and acceleration starts from maximum lateral rotation with the ball come quickly to the target. The aim of this study was to investigate the comparison between sidearm and overhand throws. Total 50 participants join in this study (Age  $20.9 \pm 0.4$ , Height  $168.9 \pm 5.3$ , and Mass  $58.8 \pm 5.3$ ). Sidearm and overhand throws were tested in one minute. Dartfish software version 4.5.2.0 is used to analyzed throwing motion. The paired t-test in this study was  $p < 0.05$  to analyze the data. The sidearm and overhand throws had significant differences with the average in one minute was 18.0 times and overhand throw was 15.5 times. Base on the motion analysis view in Dartfish, sidearm throw was more effective than overhand throw. Which is sidearm throw simpler and faster than over hand throw.

Key words: Sidearm throw, Over hand throw, Softball.

### Introduction

The good throw needs acceleration, and acceleration starts with the maximum lateral rotation. The human shoulder is made up of three bones: the clavicle, the scapula, and the humerus as well as associated muscle, ligament and tendons. Scapula and humerus position is in the horizontal forward flexion. In addition, this motion initiated during the late phase of cocking, activation humeral medial rotation and elbow extension. The center of gravity of the body continues to shift forward rapidly (Moynes, Perry, Antonelli, & Jobe, 1986). Basic skills that are needed in softball such as: throwing, catching, hitting and base running. These four basic skills must be controlled by player as soon as possible (Carruth & Jensen, 2007).

Softball is a sport that have much fun. Softball is a team sport that uses a ball and bat, and it is a simplification of the baseball game. Throwing at maximum speed involves conditions where the applied force increases with mass, but is not directly proportional to the mass. The force also varies with time, the object moves in an arc of varying radius, and the force acts in a direction that is neither parallel nor perpendicular to the object path (Cross, 2004). Hence a further to improve the learning process was that the players will be able to provide a starting point for students who want to develop the ability to play softball in the game. Learning is the basic of educational processes. In other words, learning is a process to help learners to learn well.

Sidearm throw is the one of the throwing technique that can make the runner out, not only for the batter runner when they want to run to the first base but also for the runner who stolen the base and player who want to go to home base to score. According to the issues identification in the background, the author wants to analyze the quality throwing of the players. Therefore, the aim of this study was to investigate the comparison between sidearm and overhand throws.

### Methods

Total participants of this study were 50 players. Throwing tests were performed for one minute and all participants are right handed. Before test begin the participant fill the informed consent and warming up as they need. The participants had an average of age 20.9 years, with mean body weight and height 58.8 kg and 168.9 cm (Table 1).

Table 1. Participants Information

	Mean ± SD (n=50)
Age (year)	20.9 ± 0.4
Height (cm)	168.9 ± 5.3
Weight (kg)	58.8 ± 5.3

### Procedures

Each participant started to throw the ball to warm up. The level warm-up significantly increased both throwing velocity and accuracy. Throwing velocity increased by approximately 5 to 10 % due to the overweight warm-up(Escamilla, Speer, Fleisig, Barrentine, & Andrews, 2000). Participants are expected to be ready by the time when the test conducted. Balls, softball field, and glove are needed. The intervals that create each step of the throwing test allow constant reinforcement to improve interest and reduce boredom(Axe, Windley, & Snyder-Mackler, 2002). Finally, the whole throwing test is outlined with detailed instructions for throwing progression. After initial instruction, supervision by an assistant, timer or any other member of the participants might only be necessary to ensure that the subjects understand all the instructions.

Procedure for the data collection in this study is by counting the number of throws for one minute and to distinguish the throwing angle and throwing motion using software. Two expertise in the softball displayed to see and to provide validation of overhand and sidearm throws motion. Overhand throw stated correctly when wrist movement is above the shoulder's line and near to the head, while the sidearm throw declared right when the wrist moves parallel to or below the shoulder's line and the elbow closer to the body. In these throwing performance, the function of the biceps muscle is primarily as an elbow flexor and forearm supinator(Ferry, Lee, Murphy, Romeo, & Verma, 2009).

In this study, the author used a quantitative data to support the research.Statistics used to make inferences and predictions based on the data gathered(Berkson et al., 2006). Each test was monitored by an assistant who calculated the number of students' throwing in each minute. Stopwatch is used to measure the time in sidearm and overhand throws.

This study focused in the infielder player, because the sidearm throw is matched on the player who near by the target and the distance is not too far.It same like Rojas et al., (2009)that stated the second base position will guard much more of the right side of the infield, short stop tries to stop or catch any ball hit towards left field, and the third base usually take throws made to third. These three players of this position need good reflexes and good throwing acceleration.

### Data analysis

Statistical analysis was performed with the SPSS-II (version 22.0.0.0). Data were initially analyzed by repeated measured Pear t-test.The data collection was valued based on accuracy and speed of the participants throwing. The statistical test was used in significant level of  $p \leq 0.05$  to analyze the data.Dartfish software version 4.5.2.0 also used to analyze throwing motion. Data were collected and processed on each average of the results of overhand and sidearm throws.

### Result

Based on the findings above, the mean score of sidearm throw overhand throwin one minute was18.08, and 15.55 for over hand throw. The standard deviation in this study was 3.34 for sidearm throw and 2.71 for over hand throw.

Table2Sidearmthrow and over hand throw analysis

	N	Minimum /times	Maximum /times	Mean	SD
Sidearm throw	50	10.00	20.00	15.55	2.71
Over hand throw	50	10.00	26.00	18.05	3.34

N= Total participants, SD= standard deviation

Table3

Paired t-test between sidearm throw and overhand throw.

	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		T	df	Sig. (2-tailed)
				Lower	Upper			
				Sidearm throw - Overhand throw	2.533			

The Paired t-test showed significant difference ( $p < 0.05$ ) between sidearm throw and overhand throw (Table 3). The Paired t-test significant difference was performed to identify between overhand throw and sidearm throw were different ( $p < 0.05$ ). The standard deviation between overhand and sidearm throws were 2.587 and the mean 2.533, it is mean the figure showed that there was different between overhand throw and sidearm throw ( $p = 0.000$ ).

### Discussion

The sidearm throw is usually used in infield position that require in a short distance. In addition, the sidearm throw is properly used in a short distance in a short time from base to base (Fleisig et al., 2011). The motion of sidearm throw is considered to be very simple comparing with overhand throw. The biomechanics system in the sidearm throw includes several steps: (1) Ready position: standing on two legs at a distance equal to the shoulder width or more, (2) Initial motion: Pull the hand holding the ball towards to the back side accompanied by rotating the waist. (3) Throwing motion: Throw the ball from the back side, then through the side of the body below the shoulders towards to the target, (4) Followthrough motion: After the ball release from the hand, body motion is accompanied follows throw from the wrist and the finger.

Maximal elbow angle was approximately  $130^\circ$  in overhand, and  $150^\circ$  in the sidearm throws. Elbow angle on sidearm throw during acceleration also different, in the overhand throw the angle is  $60^\circ$  vs  $13^\circ$  for sidearm throw. Sidearm throw in deceleration phase is higher than overhand ( $147^\circ$  vs  $140^\circ$ ). When arm release the ball, the arm line moves straight toward to the target and it make sidearm faster than overhand throws. Maximal shoulder angle in the overhand throw was approximately  $110^\circ$ , and only  $90^\circ$  for the sidearm throw. The linear velocities of arm segments in both throwing technique showed significant increases as the segment became more distal to the body.

In the throwing motion, sidearm throw acceleration is shorter than overhand throw. When sidearm throw moves, the elbow is in the below position of the shoulder when entire the arm motion and keep the stability when the ball is released. The sidearm throw placing is more emphasis on forearm and wrist movement than using shoulder. The arm acceleration phase in overhand throwing by Escamilla & Andrews, (2009) and Escamilla et al., (2000) begins at maximum shoulder external rotation and ends at ball release. Arm movement is more in the horizontal position. Once the projectile is released the throwing arm keeps moving across the body. Sidearm throw is simple than overhand throw, sidearm throw only release the ball from the arm and follow the arm motion to the left side of the body, but for overhand throw not only the arm moving away after released the ball but also the foot had to move to make the body balance and not falling down.

### Effectiveness movement

Sidearm throw is also called a three-quarter throw, the sidearm throw is usually used when players need speed and can be maximize with the strength in the short distance. The force varies with the time, the object moves in an arc of varying radius, and the force act in a direction that is neither parallel nor perpendicular to the object path (Cross, 2004). The second baseman and other players who are close to the receiver should throw sidearm. The ball remains visible to the receiver and easy to track, react, and catch. Players should not use sidearm throw in over long distances. The weight of the ball and increased stress on the elbow can lead to the elbow injuries if players throwing in a wrong technique. The first baseman also prefers to throw the ball across the target not in a curveball (Moynes et al., 1986).

Sidearm throw is a common way of throwing the ball in the infield position. According to the skills of throwing between overhand throw and sidearm throw, the information that obtained in overhand throw is used for all long distance and outfielders use it in most of the time.

Cross, (2004) recommend the muscle forces exerted when throwing an object are difficult to determine from kinematic data due to the large number of muscles and relations involved. In addition, sidearm throw effectively used for short distances, especially for the second baseman to the first baseman.

The sidearm throw projectile trajectory is horizontal (at an angle of 0°) and it make the ball faster to the target. The purpose of simplification is the effects of aerodynamic forces will be disregarded in the discussion of projectile motion. Wilk, Meister, & Andrews, (2002) reported that most player exhibit an obvious difference motion whereby external rotation is excessive and internal rotation is limited at 90° of abduction. Good movement in the throwing also reduce the risk of injury, the efficiency of energy transfer from the lower extremity to the upper extremity is probably an important factor influencing injury, that's mean stabilization of the pelvis by the gluteal muscles group to be extremely important (Oliver, 2010).

There were some limitations in this study, there was no information about the arm length and muscle strength from each participant. The data differences between acceleration and power of participants also became one of the issue that are not addressed in this study, as we know the speed of the throwing also affected by long or short arm and also the power of the arm. So, the basic strength of throws each participant is not known, either from the overhand and sidearm throws. Future research is expected to complement the previous research.

### **Conclusion**

Due to the nature of the throwing that requires a short time, sidearm throw can be used by an infielder to get the runner out. Based on the above findings, sidearm throw technique was more effectively. Sidearm throw movement is shorter and simpler than the overhand throw. This study will help to determine the efficacy of throwing when athletes want to be infielder player. If throwing mechanics are good between basic throw and motion analysis, it will be easier to elevate the skill to the next level.

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## **The Effect of imagery training on swimming performance of athletes at Kombolcha textile factory swimming club in Ethiopia**

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### **Abstract**

The purpose of this study is to investigate the effect of imagery training on swimming performance of athletes at Kombolcha textile factory swimming club in Ethiopia. Movement Imagery Questionnaire was applied to measure imagery ability of the athletes. The swimming performance of the athletes in 200m madelay was continuously measured during baseline and within 6 weeks imagery intervention phase.

A Single subject research design shows that there was no difficulty in feeling or seeing their respective imagery scripts. All the participant data confirmed positive changes in performance. Participant two (P2) had a remarkable improvement in performance due to imagery intervention compared to the other swimmers. These changes involve a significant improvement in performance after they received the imagery training together with their regular training program. All swimmers rated the imagery intervention as very beneficial in improving their performance. Future research should critically analyze the effects of imagery interventions using a multiple baseline designs that include other psychological measures, like confidence, arousal and motivation, in addition to performance measures.

Basic terms: Imagery, training and Performance

### **Introduction:**

According to Weinberg & Gould, 2011, Imagery can be defined as the creation or re-creation of an experience in the mind. It is a mental skill used by athletes to facilitate sport performance (Munroe, Giacobbi, Hall, & Weinberg, 2000). It is also used to enhance skill acquisition (Hall, Mack, Paivio & Hausenblas, 1998), there is evidence that mental practice can accelerate learning and improve motor skills. For example, Olympic swimmer, like Janet Evans has been used imagery during training and competition (Macintyre & Moran, 2007).

Statements of the problem : Ethiopia has been participated in modern Olympic with swimming sport since 2012, Yanite Seyume, the only female swimmer who represents Ethiopia in 2012 London Olympic were also found from kombolcha textile factory swimming club. But her performance in international tournament was not as expected. Swimming sport is not as popular as soccer and long distance running in Ethiopia. Kombolcha textile factory swimming club is most popular swimming club in Ethiopia. In national championship and in regional computation, most of the gold medals have been taken by athletes from kombolcha textile factory swimming club. According to Weinberg & Gould (2011) imagery is most effective when used in combination with physical practice. In kombolcha textile factory swimming club, except imagery intervention, the training program has been given for athletes have been going on land and in water as recommended by researcher in the field. Therefore, the purpose of this inquiry is to investigate the effect of imagery training in swimming performance of athletes at Kombolcha textile factory swimming club in Ethiopia. .

Objective of the study: The general objective of this study is to investigate the effects of an imagery intervention on swimmers' performance of athletes. And to what extent it has bring changes on swimming performance

Significance of the study: In Ethiopia, there is no official study shown the effect of imagery intervention on any sport performance. Therefore, this research paves the way for further investigation undergoing so as to assist athletic performance from psychological perspective. Specifically, the report hopefully used to improve effective training in swimming club.

Delimitations: Due to time and resource constraints, the study restricted to specific swimming club, specifically , only to those young male athletes attending swimming training in kombolcha textile factory swimming club.

**Methods**

Design of the study: Single subject research design involves studying a single individual by taking repeated measurements of two dependent variables.

Participant: The subjects of the study are athletes (swimmer) of kombolcha textile factory swimming club in the year, 2015/16. Three male athletes were participated in the study. All athletes and their coach agreed and participated in the study.

Data collection: Imagery ability of each participant’s was measured by adapting movement Imagery Questionnaire- (MIQ; Hall & Martin, 1997). Continuous assessment measures are used as a basis for drawing inferences about the effectiveness of intervention procedures. (Louis Cohen, Lawrence Manion and Keith, (2000)

Data Analysis: Visual inspection was used to analyze the data set. This included graphing participants’ times on the 200m individual medley practice and then visually analyzing the chart to evaluate their level of change. (Satake, E. B., Jagaroo, V., & Maxwell, D. L. (2008)..

**Result**

Imagery Ability and devotion: All participants’ MIQ-R mean scores were above 20 for both the visual and kinesthetic scales (Table 1). Imagery written record examined that two out of the three subjects devoted to the studies procedure. Participant one listened to the scripts once to twice a week, but he had no difficulty listening to the imagery script on the practice set.

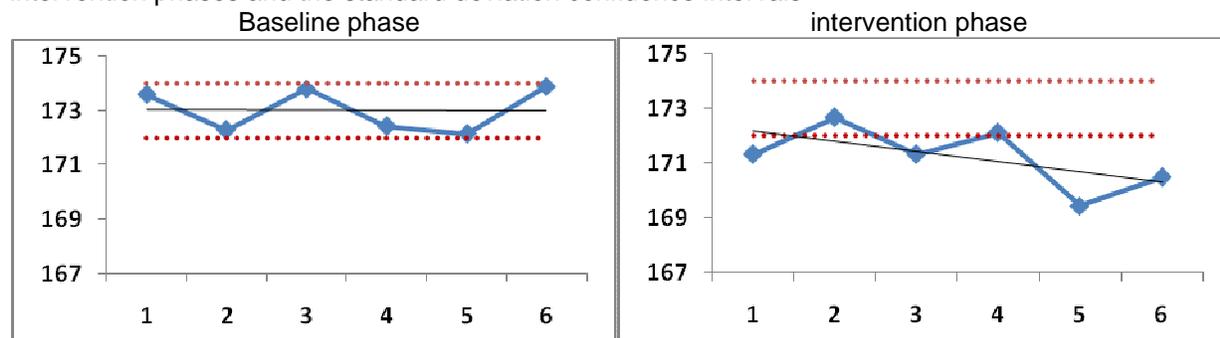
Table1. Participants mean MIQ-R scores for both Kinesthetic and Visual subscales.

	Participants		
Scale	1	2	3
Kinesthetic	21	23	20
Visual	23	23	22

The ability ratings on the imagery written records (where 1 = hard and 7 = easy) indicated that all of the participants had no difficulty feeling (M = 5.33; SD = .65) or seeing (M = 5.66; SD = .77) their respective imagery scripts.

**Performance**

Figure1: Participant one (P1), 200m medley performance times in seconds during baseline and intervention phases and the standard deviation confidence intervals

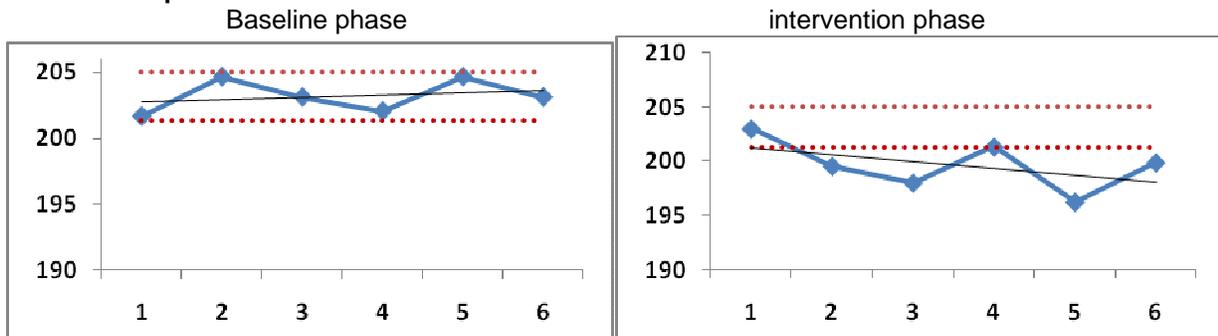


Number of weeks

As figure 1 indicates, Participant one's (P1), mean performance time before and after the imagery intervention was 173.02 s and 171.23 s. he improved an average of 0.79 s from his baseline performance. Analysis of the two standard deviation confidence intervals reveals that the final two data points fell outside of the lower confidence interval, suggesting a significant change in level between the two phases. There was no overlapping data before and after intervention phase, but, the variability before intervention (SD= 0.82) was slightly lower than the post-intervention phase (SD=1.14).

Inspection of the acceleration lines suggests a significant change in slope between the two phases. During the baseline phase the trend was zero, but during the post-intervention phase the trend was decelerating. Taken together the results of the visual inspection suggest there was a slight change in times between performance in the baseline and post-intervention phases.

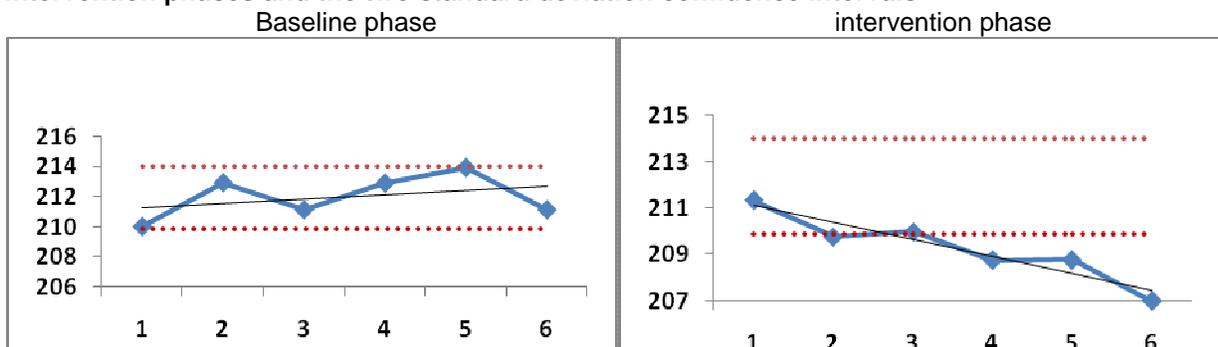
**Figure 2: Participant two (P2), 200m performance times in seconds during baseline and intervention phases and the two standard deviation confidence intervals**



Number of weeks

As figure 2 indicates, Participant two's (P2), mean performance before and after the imagery intervention was 203.20 s and 199.66 s for the post intervention phase. Participant 2 dropped an average of 3.54 s after the intervention compared to his baseline performance. Analysis of the two standard deviation confidence intervals demonstrates that most observations during the post-intervention phase were outside the lower confidence interval, suggesting a significant change in level from her baseline times. Furthermore, there were no overlapping data points, but the variability was slightly lower before the intervention (SD = 1.27) than his post-intervention times (SD = 2.38). Examination of the acceleration lines suggests a significant change in slope between the two phases. The trend line during the baseline phase was slightly accelerating, whereas the slope was decelerating in the post-intervention phase. Collectively, the results of the visual inspection suggest that participant two's time's significantly improved from the baseline to the post-intervention phase.

**Figure 3: Participant 3, 200m performance times in seconds during baseline and post-intervention phases and the two standard deviation confidence intervals**



Number of weeks

As figure 3 indicates, Participant three's (P3) average performance time before and after the intervention were 211.98 s and 209.27 s. After the intervention for difference of 2.71 s. Analysis of the two standard deviation confidence intervals shows the last three consecutive data points below the lower confidence interval in the post-intervention phase.

The deviation of data in the baseline phases and post intervention phase was 1.47 and 1.46 respectively. Examination of the celeration lines revealed a significant change in slope between the two phases. The trend line during the baseline phase was accelerating, whereas the slope was decelerating in the post-intervention phase. Taken together the results of the visual inspection suggest there was a minimum change in times between performance in the baseline and post-intervention phases.

#### **Post-Experimental Interviews**

The post-experimental interviews exposed that imagery training was important for all of the participants to improve their times on the 200m medley practice. Participants two and three reported that they were very much enjoyed using the imagery intervention and the same participants believed that the intervention was very beneficial in improving their times. All participants reported that they would continue to use imagery for both competitions and practices.

#### **Conclusion**

The imagery intervention demonstrated to improve times on the 200m medley practice for three swimmers. Participant two's data examined a direct and persistent benefit of the imagery intervention; there were no overlapping data points, and a clear change in level and slope. Participant two had a remarkable improvement in performance compared to the other swimmers. All the participant data confirmed positive changes in level and slope. These changes imply a significant improvement in performance after they received the imagery training.

#### **Recommendation**

The results of this study offer some possibilities for future imagery research. First, more experimental research is required to investigate the influence of imagery interventions on continuous skill. Second, applied imagery research using a multiple baseline designs should include psychological measures (e.g., confidence, arousal and motivation) in addition to performance measures. The enclosure of these measures would offer additional information about how imagery influence psychological factors related with successful performance.

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## About The Track Cycling And Asian Track Cycling Championship

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### **History Of Track Cycling :-**

The very first bicycles relied on the rider pushing the bike along with their feet. There were no pedals, gears or brakes. In 1839 a Scottish blacksmith invented the 'pedal and crank', this enabled the rider to turn two pedals which turned the wheel. Penny farthings, the bikes with the enormous front wheel and small back wheel, were invented in the 1870s. The front wheel was made larger than the back as the makers realised that with one pedal you could travel further the bigger the wheel. The two pedals of course, were attached to the front wheel. The development of the chain and gearing system in the 1880s made a big difference to the speed that could be achieved. It is still the system used today more than 120 years later. Cycling was an event in the first modern day Olympics held in 1896. Track racing has been held at all Olympic Games except for 1912 in Stockholm. The number of events in the Olympic has increased to include the road race, time trial, track events and in 2000 the Mountain Bike. The first women's Olympic track cycling event was held in 1988.

### **The Track :-**

The track to use for the Games is an oval shaped. The velodrome (track) has a circumference of 250 metres around and built from sement konkret or Siberian pine, which is measured on the innermost edge of the track. The straight of most tracks have a tilt of around 12 degrees whereas the till on the bends can be 40 to 42 degrees and is seven metres wide.

**Sprinter's line :-** This red line marks the outer edge of the section of the track called the sprinter's lane. The inner edge of this section is the blue pole line. During a sprint finish, the riders must follow certain rules whilst are in the sprinter's lane. **Pole line :-** The pole line is a blue line which marks the inner edge of the track. This line is used to measure the length of the track. The yellow area on the inside of the track is used by riders to cool down after an event. **Finish Line :-** Track events vary greatly in length. They range from the sprints which are three laps but only the last 200m. is timed to the 40km points race which also includes 16 sprints to the finish line to gain points. In some events riders start together whereas in others riders start on opposite sides of the track and try to overtake their opponents.

### **CYCLES :-**

The minimum weight of the bike (Cycle) is 6.8kg. The space age frame design incorporates a material called carbon fiber. This material can be moulded to almost any shape maintaining maximum strength while using the minimum amount of material. The frame is significantly more aerodynamic than the standard tubed frame.

The high-tech wheels used in some track cycles are solid and made from carbon fiber, an extremely strong and light material. The carbon fiber again is used for its high strength and stiffness. These carefully designed wheels enable overall weight reduction in the wheels which results in superior acceleration for the rider. The solid nature of the wheel also lowers wind resistance which means less energy is used by the cyclist. The tyres are pumped up to amazing pressures of up to 200 psi which is more than 5 times the air pressure in a tyre on an average family car. This high pressure translates into less of the tyre in contact with the track surface which means less rolling resistance.

## HELMETS :-

Helmets are designed to be aerodynamic with a pointed 'tail' which is designed to reduce helmet drag. The shape used often resembles a tear drop. Helmets are required for all cycling events.

## ABOUT TRACK CYCLING EVENT :-

**Sprint** :- The sprint classic is a short distance event, which two or more riders compete over three laps of 750 meters. Only the final 200 meters of the racing is timed, only the twelve fastest riders from men and eight fastest riders from women qualify to contest the finals. The special requirements of the sprint are strength and speed. Riders try to out position each other in a game of 'cat and mouse'.

**Team Sprint** :- The team sprint is a form of relay conducted over three laps of the velodrome. Each team has three riders, (two for women), with two teams competing simultaneously and each one starting on opposite sides of the track. At the start, the riders line up three (two for women) abreast on the pursuit line which is also the finishing line for this. With the first rider starting at the bottom of the track leading out the next two for one complete lap, then swinging up and out of the event. The second rider then completes a full lap setting the pace and, once completed, he or she too swings up and out of the event, leaving the final rider to complete his or her lap. The team that completes the three (two) laps in the quickest time is the winner.

**Individual Time Trial** :- The time trial, as the name suggests, is a race against the clock. Competitors are timed to see how quickly they can complete their required distance. The men's event takes place 1,000 metres (often referred to as the 'kilo') while the women's event is over 500 metres. This event is an extremely precise discipline. It requires the co-ordination of numerous skills to maximise efficiency and speed as the slightest error adds vital 1/100ths of a second to the overall time.

**Scratch Race** :- The scratch race is one of the most exciting events. It begins as a huddled mass of competitors who race the 20km (women 10km) distance with the first rider across the line named the winner. Tactics are important in this event, with endurance riders keeping the pace fast and furious from the gun in an effort to eliminate the sprint specialists, who will attempt to shelter within the group to conserve their strength for the final laps. The final five laps are where the skills, judgment and strength of the competitors come to the fore as the field surges to the finishing line.

**Points Race** :- The points race looks similar to a scratch race to the first-time viewer. In this event, however, there are sprints held every 10 laps for points. Points are awarded to the first four riders of each sprint (5 for first, 3 for second, 2 for third and 1 point for fourth). Double points are awarded on the last lap. Points are not the most important aim of the riders – they are trying to lap the rest of the field. If a rider can achieve this, then he or she wins the race. If more than one rider gains a lap or the whole field finishes on the same lap, then points decide the outcome. When two or more riders finish equal on points, their placing in the final sprint determines the winner and place getters of the race. The men's points race is 40km while the women's is 25km.

**Individual Pursuit** :- The individual pursuit is classified as a track endurance event. The riders start and finish on the pursuit lines, with one competitor starting on either side of the track. Each rider competes in a qualifying round, where they are timed over the distance of the event. The fastest eight then compete against each other for one of the four places in the finals. In these rounds of finals, the riders' times are not the only measurement of success. If a rider in 'pursuit' of their opposition actually catches them, they are deemed to have won the race. The men compete over 4,000m and the women over 3,000m in the individual pursuit. **Teams Pursuit** :- A pursuit team consists of four riders and this event is conducted using the same format as the individual pursuit. The teams line up across the pursuit line with the team's official time being taken when the third rider completes the course. During this event all the riders share the workload of setting the pace, after which they move up the track and tuck back into the slipstream at the rear of the team. **Keirin** :- The keirin is a fast and exciting event featuring speed, strength and courage. It is raced over a distance of 2,000 metres with a maximum field of eight riders. The derny a motorised bicycle that paces the field over the first 1,400 metres. Starting of at 30km/h and bringing riders up to 50km/h. (women's Keirin 25-45 km/h). Riders manoeuvre for the most favourable position before the derny leaves the track. No cyclist is permitted to pass the derny, which departs with two and a half laps remaining, and then the battle begins. **Madison** :- The Madison is similar to the points race, except it is done with two person teams. Riders can sling each other into the race so they can rest for short periods while their teammate is in the action. A team can gain a distinct advantage by lapping the field. If a team does this they are automatically leading even if they have scored no points in the sprints. The winning team is the team leading on points at the finish or who is a lap ahead of the rest.

**Omnium :-** The omnium is a new event on the Olympic programme. It is designed to formulate the ironman of cycling and discover the most versatile cyclist of track racing. The event consists of six events held over two days starting with a flying lap, then a point race, an elimination race, an individual pursuit, scratch race and finally a time trial. From each of the six events the competitors will be ranked from first to last place. The overall Omnium winner will be determined by the cyclist who has accumulated the lowest total of the ranking for the six events.

**Asian Track Cycling Championship 2017 New Delhi :-**

The Cycling Federation of India under the aegis of International Cycling Union and Asian Cycling Confederation is organizing 37<sup>th</sup> Asian Cycling Championship from Feb. 06-10, 2017, at indoor cycling velodrome, IG Sports complex, New Delhi. The velodrome is among the best in the world and also functions as a World Satellite center of UCI. In a large number of cyclists and teams from many Asian countries participating and many Olympic medalists and International cyclists also part of the event.

**Atcc 2017 Medal Standing :-**

<b>RANK</b>	<b>COUNTRY</b>	<b>GOLD</b>	<b>SILVER</b>	<b>BRONZE</b>	<b>TOTAL</b>
1	South Korea	9	13	8	30
2	China	8	3	3	14
3	Japan	7	5	13	25
4	Kazakhstan	6	4	3	13
5	Hong Kong	5	3	3	11
6	Iran	2	3	-	5
7	Malaysia	1	-	2	3
8	Chinese Taipei	-	5	1	6
9	Thailand	-	1	1	2
9	Macau	-	1	1	2
11	India	-	-	2	2
12	UAE	-	-	1	1

**Conclusion :-**

Riders in the 2017 Asian track cycling championship will compete for glory across a range of track cycling race formats comprising individual and team above events. Here is a guide to the basic of each race discipline to guide you through the championships.

**Reference :-**

- www. Cycling federation of India.org
- www. Asian cycling confederation
- www. International cycling union

## Effect Of Varied Surface SAQ Training On Muscular Strength Of Hockey Players

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### Abstract

The purpose of this study is to determine the effect of varied surface S.A.Q training on muscular strength among hockey players. Forty five subjects were selected from the Nizamabad district, Telangana state, and their age ranged from 14-16 years. The subjects were equally divided into three groups (n= 15) namely sand surface SAQ group (SSSAQ), Firm soil surface SAQ group (FSSSAQ) and control group. Pull up test was used to measure muscular strength. Training was given for a period of 12 weeks. The results of pre-test and post-test were statistically analyzed by using analysis of co-variance. The result when compared between the two experimental groups revealed that both the training groups showed significant improvement than control group. The result when compared between the two experimental groups, it was found that sand surface SAQ group was better than firm surface SAQ group on muscular strength. Hence researcher suggest that including SAQ drills in sand is viable option for coaches to enhance performance in hockey players, while reducing risk of muscle soreness and damage.

Key words: S.A.Q training, sand, firm surface, muscular strength, Hockey players.

### Introduction

Many of the developmental and conditioning programs offered today focus on activities geared towards the development of the basic bio motor skills children naturally develop during play. Speed, Agility, and Quickness (S.A.Q.) training has become a popular way to train athletes. With increasing need to promote athletic ability, this type of training has proven to enhance the practical field abilities of participants in a wide variety of sports. This type of training is also marketed to athletes for the enhancement of athletic performance and injury prevention. The components traditionally targeted for improvement have been speed, agility, and quickness (SAQ). Randy Smithe popularized the acronym SAQ, back in the 80s. He developed equipment and programs geared to the athlete and the enhancement of these important athletic components. SAQ drills focus on running mechanics, movement efficiency, coordination and reaction training. Obviously, this type of training enhances muscle strength, endurance and motor skills. It is practised in addition to conventional resistance training in the gym and serves to assist the strength gained there to performance in the arena of play. However, another main benefit of SAQ training is injury prevention, or "pre-habilitation." This applies to the athlete and non-athlete alike.

Sand is a great training tool for improving speed and agility. It provides resistance that challenges your muscles, helping to make you faster and more explosive. The constant shifting under your feet engages small stabilizer muscles that improve balance and reduce the risk of injury. Plus, sand training gives you an excuse to work out in the great outdoors.

In highly competitive modern team sports such as soccer, rugby and hockey, there is an increasing demand for scientific research into practical and cost effective methods of athlete preparation. One such avenue that has been scarcely explored in team sports is the use of alternate training surfaces, such as sand. The widespread accessibility of various natural (beach) and artificial (indoor and outdoor) sand surfaces makes sand training a viable option for coaches and sport science practitioners working with team sports. Hockey sport requires fast movements of the arms and legs, where the speed, agility and quickness training can improve these skills precisely. Hence, Hockey players can be benefited by combining speed, agility, and quickness training in sand is integrated into their training program.

### Methodology

The purpose of the study was to find out the effect of varied surface S.A.Q training on muscular strength among hockey players. Forty five subjects were selected from the Nizamabad district, Telangana state, and their age ranged from 14-16 years. All subjects have at least two years of hockey playing experience. The subjects were equally divided into three groups (n= 15) namely sand surface SAQ group (SSSAQ), Firm soil surface SAQ group (FSSSAQ) and control. Control group did not undergo any training programme rather than their daily routine work. Training was given for a period of 12 weeks. Training was given on alternative days in a week except Sunday. The training session was carried out for 60 min which includes warming up and cooling down. Training schedule was same for both training groups which includes SAQ drills like 40 yards square drills and bear crawl, medicine ball chest pass, lateral shuffle with medicine ball, goalie drill, crocodile walk etc., muscular strength was measured through pull ups test by grasping bar palm faces towards them. The results of pre-test and post- test were compared by using Analysis of Covariance (ANCOVA). The subjects living condition and life style were not taken into consideration for this study.

**Table-I Analysis of Covariance for Experimental Groups and Control Group on Muscular Strength**

	Sand SSAQ	Firm SSSAQ	Control group	SO V	SOS	df	Mean square	'F' ratio	Sig
<b>Pre-test Mean</b>	5.33	5.80	6.00	B	1.64	2	0.82	0.24	0.78
<b>SD</b>	1.68	1.85	1.96	W	142.13	42	3.38		
<b>Post-test Mean</b>	8.93	8.13	7.06	B	26.31	2	13.15	4.26*	0.02
<b>SD</b>	1.62	2.06	1.53	W	129.60	42	3.08		
<b>Adjusted Post-test Mean</b>	9.11	8.11	6.89	B	36.59	2	18.29	15.26*	0.00
				W	49.14	41	1.19		

**\*Significant at 0.05 level**

Required table value for df 2 and 42 at 0.05 level is 3.22

Table I shows the analysis of co-variance for the pre-test mean on muscular strength is 0.24. There is no significant difference among the three groups on muscular strength, since the calculated 'f' value 0.24 is less than the required table value 3.22. But there is significant difference among the post test means of the three groups on muscular strength, since the calculated 'f' value 4.26 is greater than the required value 3.22. The adjust post test mean 15.26 is also significant, since the calculated value is greater than the required value 3.22. Since the result showed significant difference among the three groups, the scheffe's post hoc test was used to find out the significant difference between the paired means.

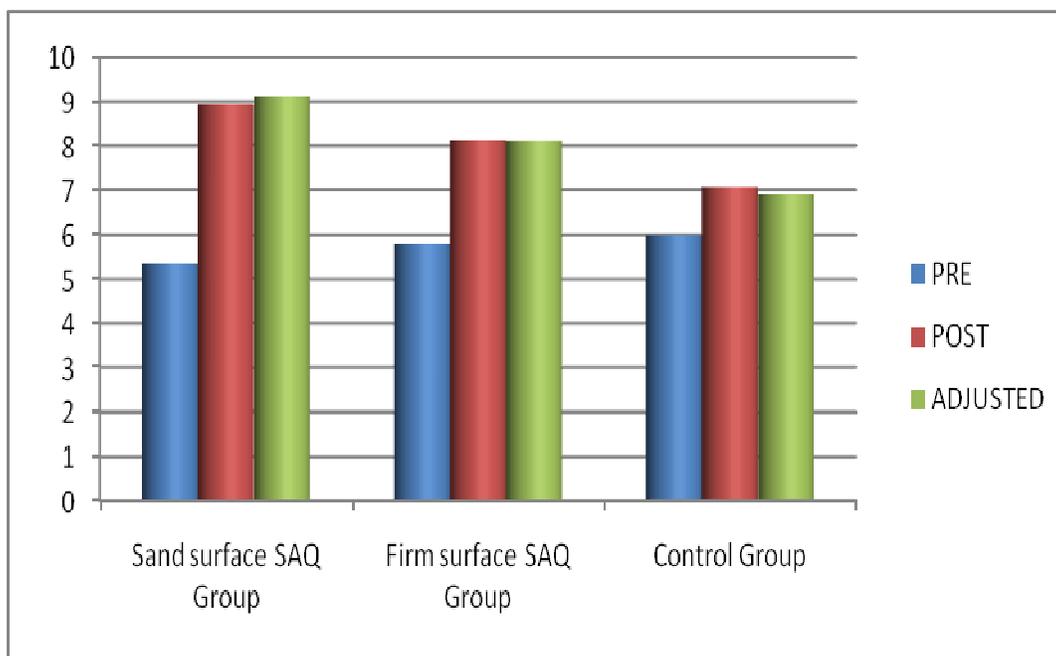
**Table – II: SCHEFFE’S POST HOC TEST ON MUSCULAR STRENGTH**

Sand SSAQ	Firm SSSAQ	Control group	Mean Difference	CI
9.11	--	6.89	2.22*	0.98
9.11	8.11	--	1.00*	
--	8.11	6.89	1.22*	

**Confidence interval value at 0.05 is 0.98**

Table II shows the scheffe’s post-hoc tests for the significant differences between the paired means among the three groups. For muscular strength the mean differences between the sand SSAQ group and control group is 2.22. In the comparison between sand SSAQ group and Firm SSSAQ group the mean difference is 1.00. The adjusted mean difference on muscular strength means between the Firm SSSAQ group and control group is 1.22. Since the mean difference between the paired means of the three groups is higher than the required table value it is noted that there is significant difference exists among the three groups.

Graphical Representation of Pre-Test, Post Test and Adjusted Post Test Means on Muscular Strength Of Sand surface SAQ Group, Firm soil surface SAQ Group and Control Group



## **Discussion & Conclusion**

The studies conducted by Singh Amrinder, et.al., (2014). Atul Meethal and Najeeb A.M (2013). Jovanovic M, et.al., (2011). Aleksandar Rajkovic, et.al., (2014). Nageswaran A.S (2015) proved that there was an improvement in muscular strength. The findings of the present study indicate that the Sand surface SAQ Group, Firm soil surface SAQ Group improved significantly when compared to the control group but the Sand surface SAQ Group is found to be better than Firm soil surface SAQ Group on muscular strength. Hence the findings of the present study were similar to the above studies, the investigator concluded that the sand surface SAQ training enhances muscular strength of hockey players which assists to perform better in their sport.

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## Physical Education And Sports Activity For Healthy Society

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### **Introductions :-**

The changing scenario of the present day world brought forward changes not only on the economic and social status of the human being but also very aspect of its life. Scientific inventions and explorations helped the individual to strive for his excellence and to create interest to know more and more about the universe. Education, as a basic to those inventions and explorations helped for the progress of our society. Around the Globe in the more highly developed countries, people live in a realm dominated by education. It is a culture's mean of survival. The progress of civilization is inextricably interwoven with the threads of education. From the age of caveman, the way human being existed and used his body and mind has had an impact on society. Since society has entrusted the responsibility of perpetuating its culture and socialising the youth to educational institutions character for the purpose and since physical education is an integral part of education, it might serve the students well to observe how physical education fits into educational settings. Physical education and sports have been described in many terms and it is not always clear what the differences between them are, the definitions of both as stated below are just some of many. Sport is an athletic activity requiring skill or physical prowess and often of a competitive nature, as running, volleyball, wrestling, golf, etc (dictionary.com). Sport is commonly used to describe a physical activity that has a competitive element, whether played by a professional or a keen enthusiast. Physical education is the systematic instruction in sports, exercises and hygiene given as part of a school and college program. Physical education and sports are both important, but they are not the same. Sports refer to an extracurricular activity that is not designed for everyone. Sports have importance in a young person's life. One of the primary benefits of sports is the character that it builds. Competition brings out the character of an individual. When a person gets caught up in the emotions of the moment, what is really inside will come out. Not only does athletics show a person's character, but it also builds character. Discipline is ingrained in an athlete as he continues to push himself in practice day after day doing things his body does not want to do. Sports also encourage people to learn how to get along with others in a team environment. This is a valuable skill that the students will need no matter what they do after school. Although the abilities that sports have will not last a lifetime, the lessons learned from sports will be used for a long time. Integrity, diligence perseverance, honesty, loyalty, respect, submission to authority and toughness are qualities that will last.

The most obvious similarity between sport and physical educations is that they both involve physical activity. Physical health benefits are gained by taking part in regular physical activity, whether that is during school hours or PE lessons, an extra curriculum activity, or playing for a club. Research shows that children who participate frequently in physical activity will reduce their chances of acquiring certain ailments such as diabetes and obesity, therefore improving their quality of life. However, other benefits such as affective and social are also gained. Research suggests that affective development is now evident with children. One of the main signs of this is a child's self-esteem that grows stronger when partaking in physical activity. Research show that stress, depression and anxiety, can also be significantly reduced with regular exercise. Probably the most important aspect of both sport and PE is social benefit. Whether you are playing basketball, football etc, with a few friends or in a controlled physical activity work out, it is evident that this is a major part of a child's social learning skills. Antisocial behaviour is frowned upon and to fit in, children tend to conform to the norm.

Physical education and sports is important to be involved in, but it is important in a different way. Physical education and sports develops students in a number of ways. The most obvious of these is physically. A good physical education and sports program will provide ways for the student to exercise his body and grow physically. A physical education and sports helps the student to grow socially. Many of the things done in a physical education and sports class are done within a team setting. Students can learn to interact with their peers and accomplish things together. Communication is vital in games where teams are involved. These skills are things which for the most part are presently necessary in the workplace. Not only does physical education and sports help to develop a person, but it also teaches him skills that he will be able to use for the rest of his life. It is often said that education is preparation for life. That is certainly the case here. A good physical education and sports class will teach person skills that he will use later. For example, exercise is important. As people get older, it is even more important that they take care of their bodies and stay in good health.

Components of physical fitness in context of Phy. education:- Health Related Physical Fitness

Cardiovascular fitness, Muscular strength, Muscular endurance and Flexibility

Components of Phy. Fitness in context of Sports:- Skill Related Physical Fitness

Agility, Balance, Coordination, Power, Speed and Reaction

### **What Are The Health Benefits Of Physical And Sports Activity :-**

The health benefits of doing regular physical and sports activity have been shown in many studies. You are likely to obtain the most benefits to your health if you are someone who is not very active at all and you become more active. However there are still benefits to be gained for anyone who increases their physical activity levels even if they are already doing 30 minutes of moderate intensity activity on most days. Overall people who do the recommended levels of physical activity can reduce their risk of premature death 20-30 % other health benefits include the following.

Coronary heart disease, High blood pressure, Cholesterol, Stroke, Diabetes, Bone and joint problems

Weight control, Cancer, Mental health, Memory loss and dementia, Reduce stress.

Should How Much Physical Activity People Do :-

Children (Under 5 years) :- Physical activity should be encouraged from birth. Particularly through floor based play and water based activities in safe environments. Children of preschool age who are capable of walking unaided should be physically active daily for at least 180 minutes spread throughout the day.

Children and young people (aged 5 to 18 years) :- Moderate to vigorous intensity physical activity for at least 60 minutes and up to several hours every day. Vigorous to intensity activities including those that strengthen muscle and bone should be incorporated at least three days a week.

Adults (aged 19 to 64 years) :- Over a week activity should add up to at least 150 minutes of moderate intensity in bouts of 10 minutes or more for example 30 minutes on at least five days a week. Comparable benefits can be achieved by 75 minutes of vigorous intensity activity spread across the week or combinations of moderate intensity and vigorous intensity activity.

Older adults (aged 65 years and older) :- Older adults who participate in any amount of physical gain some health benefits. Some physical activity is better than none and more physical activity provides greater health benefits. Older adults should aim to be active daily and if possible aim for the same amount of physical activity as younger adults.

### **Conclusion :-**

Doing regular physical activity can make you feel good about yourself and it can have a number of benefits for your health. For example it reduces the risk of developing heart disease, stroke, high blood pressure, some cancers and thinning of the bones. Regular physical activity also help to control weight and may help to ease stress boost of the your and society energy levels and improve your and society general well being. Ideally you should aim for at least 30 minutes of moderate intensity physical activity on at least five days of the week.

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Michael Schroeder health editor at u.s.

## The effect of altitude on middle and long distance runners

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**Introduction:**

Ethiopian athletes won 38 medals in Olympic Games held from 1960 – 2008. Specifically: in marathon, steeple chase, 5000 m and 10,000 m. No medals won in any other events. This indicates that running is Ethiopia’s major sport and the country has produced some of the world’s best endurance athletes. All these medalists were born and raised in Ethiopia high lands. Namely: - Arsi region eight Olympians, Bale region one Olympian, Shoa region seven Olympians, Tigray region two Olympians and Addis Ababa two Olympians were understudy.. The thin air at this altitude contains relatively little oxygen, so their body learned to do hard work without the denser atmosphere found at sea level. This gave advantage when they competed in races later. According to Wiley (2008) regions on the earth’s surface or in its atmosphere that are high above mean sea level are referred to as high altitude. High altitude is sometimes defined to begin at 2400 meters above sea level.

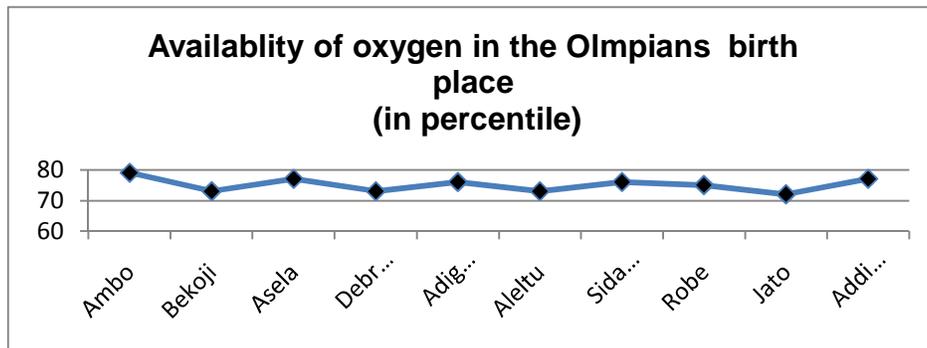
Objective of the study: The purpose of this study is to find out the contribution of high lands for the success of middle and long distance runners.

**Methodology:**

In order to explore and analyze the subject, data collected from personal records, official records and pictorial records. In addition to that Google earth; Satellite is used to determine the altitude of the birth place of the Olympians. Barometric pressure calculator also applied to scrutinize how much less oxygen is available in the birth place of Ethiopian Olympic medalists. Assuming that at 0 m, the standard barometric pressure is 101.325 kPa (760 mmHg). This means that there is 100% of oxygen available at sea level

**Discussion and result:**

For athletes, high altitude produces two contradictory effects on performance. For explosive events (sprints up to 400 meters, long jump, triple jump) the reduction in atmospheric pressure means there is less resistance from the atmosphere and the athlete’s performance will generally be better at high altitude. (Ward-Smith, AJ 1983). For endurance events the predominant effect is the reduction in oxygen which generally reduces the athlete’s performance at high altitude. Athletes also can take advantage of altitude acclimatization to increase their performance. The same changes that help the body cope with high altitude increase performance back at sea level. (Wehrin JP, Zuest P, Hallén, 2006)



Graph 2: Barometric pressure calculator used to see the % of oxygen available in the birth place of Ethiopian Olympic medalists.

The relatively poor performance of men and women in middle distance and distance running and swimming during the 1968 Olympic in Mexico City (altitude 2300 meter) resulted from the small reduction in oxygen transport at this altitude. No world records emerged in events lasting longer than 2.5 minutes. (William D. Mc Ardle, Frank I. Katch et al, 2001: p 618)

The term altitude is commonly used to mean the height above sea level of a location. Paul B. Henze, (2000:2) indicated that “the Ethiopia highlands form the largest continuous area of its altitude in the whole continent, with little of its surface falling below 1500 m.” While the summits reach heights of up to 4620 meter. The capital city of Ethiopia, Addis Ababa is also located on an elevation of around 2400 meters.

Each adjustment to a higher elevation proceeds progressively, and full acclimatization requires time. Successful adjustment to medium altitude affords only partial adjustment to a higher elevation. Residents of moderate altitudes, however, do show less decrement in physiologic capacity and exercise performance than low Landers when both group travel to higher altitude. (William D. Mc Ardle et al, 2001: p 607)

Almost all world class east African runners come from highland areas, and the thin air at the 2000 m elevations common in such places has been shown to boost aerobic capacity in several ways. (John M, 2006: 41) "You have to conclude that if your red blood mass increases dramatically when you've been at altitude for a while, you're going to have an advantage when you get to sea level." (Kevin B, 2012)

According to Kenneth as you go up a mountain, the air becomes less compressed and is therefore thinner. The important effect of this decrease in pressure is this: in a given volume of air, there are fewer molecules present. This is really just another way of saying that the pressure is lower (this is called Boyle's law). The percentage of those molecules that are oxygen is exactly the same: 21%. The problem is that there are fewer molecules of everything present, including oxygen. So although the percentage of oxygen in the atmosphere is the same, the thinner air means there is less oxygen to breathe. (Kenneth Baillie, 2010)

He also suggested that it is possible to use barometric pressure calculator to see how air pressure changes at high altitudes or to see how much less oxygen is available at any altitude. Based on this fact the researcher used this calculator to indicate the amount of oxygen available in the birth place of Ethiopian Olympic medalists. Assuming that at 0 m, the standard barometric pressure is 101.325 kPa (760 mmHg). This means that there is 100% of the oxygen available at sea level.

Table: 1 showing the birth place, altitude, Standard barometric pressure and availability of oxygen in the birth place of the Olympians.

Birth place	Altitude	Standard barometric pressure	Availability of oxygen
Ambo	2087 m	80 kPa (598 mmHg).	79%
Bekoji	2779 m	73 kPa (551 mmHg)	73%
Asela	2404 m	77 kPa (576 mmHg)	76%
Debrebirhan	2746 m	74 kPa (553 mmHg).	73%
Adigrat	2407 m	77 kPa (576 mmHg)	76%
Alelitu	2668 m	74 kPa (559 mmHg)	73%
Sidamo	2340 m	77 kPa (581 mmHg)	76%
Robe	2532 m	76 kPa (568 mmHg)	75%
Addis Ababa	2400 m	77 kPa (577 mmHg)	76%

It can be seen in the graph that the Ethiopian Olympic medalists were born and raised in a place where the average available oxygen is 75.22% in contrast to at sea level i.e. 100%. All Ethiopian Olympic medalists were born and raised in high altitude where the athletes begin to experience the limitations that a reduced oxygen intake place upon the body. As one goes up the air becomes thinner and the pressure is lower so much so that there is less oxygen to inhale. So, this thin air at Ethiopia high lands contains relatively little oxygen. Exposing the body to high altitude causes it to acclimatize to the lower level of oxygen available in the atmosphere so their body learned to do hard work without the denser atmosphere found at sea level. This improves the delivery of oxygen to the muscles that leads to better performance. This made Ethiopian Olympic medalists become beneficiary by living at higher altitudes than most populations do throughout the world. Not only have that but also by exposing to high altitude the body acclimatize by increasing the number of erythrocyte cells. The more red blood cells one has, the more oxygen can be delivered to the muscles which help the athletes to resist fatigue when they compete in races later. For any type of exercise lasting longer than a few minutes, the body must use oxygen to generate energy. Without it, muscles simply seize up and can become damaged. Training in this area is also a proven effective performance enhancing tool, as the ability of an athlete to utilize greater amounts of oxygen will naturally support improved capabilities, increase the number of small blood vessels, increase in buffering capacity (ability to manage the buildup of waste acid) and changes in the microscopic structure and function of the muscles themselves. On returning to sea level after successful acclimatization to high altitude, the body usually has more red blood cells and greater lung expansion capability than needed. Also training at high altitude has long been used by Ethiopian Olympic medalists as a means of improving their potential. This provided Ethiopian Olympic medalists in endurance sports a competitive advantage. The U.S. also maintains an Olympic training center in the mountains of Colorado. Several other nations also train their athletes at high altitude for this reason.

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## Effects Of Traditional Circuit Training And Plyometric Circuit Training On The Selected Physical Fitness Variables Among College Students

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### **Abstract**

The purpose of the study was find out the effects of traditional circuit training and plyometric circuit training on selected physical fitness variables (speed, flexibility, muscular strength and muscular endurance) of the male college students. For the present study, sixty students studying from Thandhai Roever Arts and Science College, Perambalur. Tamil Nadu, were selected randomly as subjects. Their age ranged from 13 to 17. Twenty subjects were distributed into three equally groups. Control group (N=20), Group – I traditional circuit training (N=20), group– II plyometric circuit training (N=20). The experimental groups with varied load and velocity (intensity) underwent their respective training programme for three days in a week for eight weeks. Analysis of co-variance (ANCOVA) and scheffe's post hoc tests were used to examine the significance between the variables for testing groups. The analysis was carried out using SPSS version in 21.0 and statistical significance was set to a priority at  $p < 0.05$ .all physical fitness variables signifince improvement of traditional circuit training, plyometric circuit training and control group. The speed and flexibility no significant proved of between experimental groups and to be improved muscular strength and muscular endurance.

**Key words:** Speed, Flexibility, Muscular Strength and Muscular Endurance.

### **Introduction**

There are many different training methods that help to improve the physical fitness of athletes or students. Circuit training to improve the general fitness of students. There is a strong relationship between health and physical fitness. Research shows that there is a relationship between physical fitness, changes in fitness and the mortality in healthy middle-aged men in which the increase in physical fitness may lower the risk of death and decrease the mortality of people (Erikssen et al, 1998). deVries and oush (1994) state that the optimal level of physical fitness is conducive to the lifelong health. The improvement of physical fitness in sport participation helps to minimize the risk factors of health and leads to good health.Physical fitness is very important to sport participation. Not only can it help to develop the skill of different physical activities physiologically but also psychologically. As physical fitness involves the performance of different body parts such as heart, lungs or muscles, it affects what we can do with our minds and so it influences to some degree qualities like mental alertness and emotional stability (Harris, 1996). There are many physiological benefits of physical training on health. vini and Smimova (1995) suggest that physical training can improve the central nervous system and the endocrine systems, increase energy potential, increase metabolic and functional economy, improve oxidation process, improve the capacity of oxygen transport system, increase functional stability.

The Traditional Circuit Training exercises of include push-up, sit-up, bench lifting, squat thrusts, stepping and dumbbell raising. These exercises are performed with or without apparatus. Circuit training aims at the development of the basic components of physical fitness including muscular (**Morgan & Adamson, 1961**). The plyometric training has been suggested to improve the muscular power of athletes (**Moran & McGlynn, i 997**). Originally, plyometric training is used to improve the explosive power of athletes (**Blattner & Noble, 1979; Brown et al, 1986; Clutch et al, 1983**). The traditional circuits training as the plyometric exercises are specific for explosive power development (**Bobbert et al, 1987**). As circuit training may include a. number of different training exercises, some elementary plyometrie exercises may be implemented in the stations of circuit training in this study to create a new plyometric circuit.

**HYPOTHESES**

The improvement of speed, flexibility, muscular strength and muscular endurance of the male students after the traditional circuit training is superior to that after the plyometric circuit training and control group.

**OBJECTIVES OF THE STUDY**

To find out the effects of traditional circuit training and plyometric circuit training on selected physical fitness variables (speed, flexibility, muscular strength and muscular endurance) of the male college students.

**METHODOLOGY**

**SELECTION OF SUBJECTS**

For the present study, sixty college students studying from Thandhai Roever Arts and Science College, Perambalur Tamil Nadu, were selected randomly as subjects. Their age ranged from 13 to 17. Twenty subjects were distributed into three equally groups. Control group (N=20), Group – I traditional circuit training (N=20),, group– II plyometrie circuit training (N=20),. The experimental groups with varied load and velocity (intensity) underwent their respective training programme for three days in a week for eight weeks.

**SELECTION OF VARIABLES**

Independent variable: Traditional circuit training And Plyometric circuit training and control group

Dependent variables: Physical fitness components (Speed, Flexibility, Muscular Strength and Muscular Endurance)

**Physical Fitness Components**

Criterion variables	Instruments
Speed	50m Dash
Flexibility	sit-and-reach test
Muscular Strength	Pushups test
Muscular Endurance	sit-up test

**Training Programme**

Twenty subjects participated in the traditional circuit training which included a series of traditional exercises. The selected traditional exercises in this study were shuttle run, squat thrust, and bench press, bent-knee sit-up, alternating dumbbell press, back hyperextension, weight lifting, dipping, bench stepping and squat. There were about nine to twelve different traditional exercises in each circuit of training. The number of repetitions in each exercise was gradually increased from eight to twelve. The training intensity was required to be about 65% of the maximum capacity as indicated by the heart rate. the plyometric circuit training which consisted of a series of plyometric exercises. The plyometric exercises selected in this study included squat jump, barrier jump, lateral barrier jump, front tuek jump with knees up, incline push-up depth jump, jump from bench, plyometric sit-up, incline chest pass with medicine ball and alternate leg bound. There were also about nine to twelve different plyometric exercises in each circuit. The subjects were required to complete three circuits in each training session and there were three sessions per week. The workload, intensity, duration and frequency were similar to that of the traditional circuit training for eight weeks.

### Statistical Analysis

Analysis of co-variance (ANCOVA) and scheffe's post hoc tests were used to examine the significance between the variables for testing groups. The analysis was carried out using SPSS version in 21.0 windows and statistical significance was set to a priority at  $p < 0.05$ .

TABLE –I Analysis of Covariance on Criterion Variables of Experimental Groups (ANCOVA)

Criterion variables	Adjusted post test means			Source of variance	Sum of squares	Df	Mean squares	F value
	Plyometric circuit training group	Traditional circuit training group	Control group					
Speed	7.007	6.900	7.393	B	1.521	2	0.761	5.530*
				W	7.701	56	0.136	
Flexibility	18.663	20.700	15.187	B	310.773	2	155.386	16.869*
				W	515.839	56	9.211	
Muscular Strength	21.884	18.481	14.486	B	548.159	2	274.079	205.309*
				W	74.758	56	1.335	
Muscular Endurance	30.416	28.709	26.326	B	164.590	2	82.295	45.003*
				W	102.404	56	1.829	

\*Significant at 0.05 level of confidence.

(The table value required for significance at 0.05 levels with df 2 and 56 is 3.16).

The table –I The significant difference Where shown Between Plyometric circuit training, Traditional circuit training and control group the obtained F- ratio of speed, flexibility, muscular strength and muscular endurance for adjusted post test F values were 5.530, 16.869, 205.309 and 45.003 respectively which are more than the table value of 3.16 for df 2 and 56 required for significant at .05 level of confidence. So the results indicate that there was a significant improvement between pre and post test means of experimental groups. There was no change found on control group. This study indicates that Plyometric circuit training, Traditional circuit training for school children's would support for the development of the physical fitness variables.

Table –II :Scheffe's Paired Mean Difference of Experimental and Control Groups

Criterion variables	Plyometric circuit training group	Traditional circuit training group	Control group	Paired Mean Differences	C.I
Speed	7.007	6.900	-	0.10	<b>0.29</b>
	7.007	-	7.393	0.38*	
	-	6.900	7.393	0.39*	
Flexibility	18.663	20.700		1.52	<b>2.38</b>
	18.663		15.187	3.47*	
		20.700	15.187	5.51*	
Muscular Strength	21.884	18.481	-	3.40*	<b>0.91</b>
	21.884	-	14.486	7.39*	
	-	18.481	14.486	3.99*	
Muscular Endurance	30.416	28.709		1.70*	<b>1.05</b>
	30.416		26.326	4.09*	
		28.709	26.326	2.38*	

\* Significant at .05 level

The table -II shows the paired mean differences on speed of Plyometric circuit training and control group, Traditional circuit training and control group are 0.38 and 0.39.the flexibility of 3.47 and 5.51 respectively. These values are greater than the confidence interval values of for speed 0.29, and flexibility 2.38.which are no paired mean differences between speed and flexibility of Plyometric circuit training and Traditional circuit training 0.10 and 1.52.there is less than confidence interval values. The mean differences of muscular strength 3.40, 7.39 and 3.99 muscular endurance are 1.70, 4.09 and 2.38 respectively. These values are greater than the confidence interval values of 0.91 and 1.05.The result of the study shows that there were significant differences between of Plyometric circuit training and Traditional circuit training the mean differences were greater than the confidence interval values of muscular strength and muscular endurance. The speed, flexibility, muscular strength and muscular endurance are better than control groups.

## Discussion And Finding

The results of this study suggest that eight weeks of Plyometric circuit training and Traditional circuit training have a beneficial effect on speed, flexibility, muscular strength and muscular endurance on school children's. There was a control group that received no training apart from the physical fitness tests. There were significant differences found in the physical fitness test results of the traditional circuit training group and Plyometric circuit training as compared with the control group. According to the results of the Table 2 there were significant improvements of the Speed, Flexibility, Muscular Strength and Muscular Endurance where traditional circuit training group and control groups. **Atul Meethal And A.M.Najeeb(2013), Sivakumar. M et al (2014)**. Muscular Strength and Muscular Endurance where significant improvements of the plyometric circuit training and control groups. It showed that different components of physical fitness were not equally affected by the traditional circuit training, the improvement in flexibility helps to decrease the chance of hamstring injuries (**Hartig & Henderson, 1999**). But there is no significance of speed and flexibility for between experimental groups.

## Conclusion

Eight weeks of training of both the plyometric circuit training group ,traditional circuit training group and control group showed significant increase in speed, flexibility, Muscular Strength and Muscular Endurance. Between the experimental groups plyometric circuit training group and traditional circuit training group showed significant improvement of Muscular Strength and Muscular Endurance. There is no significance of speed and flexibility for between experimental groups.

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## **Effect Of Plyometric Training And Modifield Training On Selected Physical And Physiological variables Among School Boys**

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### **Abstract**

The purpose of this study was find out the Effect of Modifield Training and Plyometric Training on Selected Physical and Physiological Variables among School Boys. Thirty subjects were randomly selected from Alagappa model school, Karaikudi, Tamil Nadu. The subject's age ranged between 13-17 years only. They were randomly divided into three equal groups. Modified training group, plyometric training group were considered as two experimental groups and the other group was control group. The study was formulated as pre and post test pre experimental design. The analysis of covariance (ANCOVA) was applied to find out the variance in each criterion variable. The level of significance to test and 'F' ratio, obtained by the analysis of co-variance was fixed at 0.05 level of confidence. The significant improvement in leg explosive power and  $vo_2$  max for plyometric training followed by Modified training and control group. There would be a no significant difference between plyometric training and Modified training on leg explosive power and  $vo_2$  max.

Key words: Modified training, plyometric,  $Vo_2$  max and leg power.

### **Introduction**

Sport training is a systematic process extending over a long period. For best result the system of training has to be based and conducted on scientific factors and lines where it is not possible to do that, the training has to be based on the results successful practice which has withstood the test of time sport. Physical training aims at improving the performance of sports persons. The sports performance depends on several factors. The performance of sports primarily depends on his performance capacity, such as speed, strength and endurance.

It is competitive physical activity using bicycles. There are several categories of bicycle racing including road bicycle racing, time trialing, cycle-cross, mountain bike racing, track cycling and cycle speedway. Non-racing cycling sports include artistic cycling, cycle polo and mountain bike trials. The Union Cyclist International is the world governing body for cycling and international competitive cycling events. Bicycle is a very efficient method of locomotion. Speed and strength are integral components of fitness found in varying degrees in virtually all athletic movements. The combination of speed and strength is called power. For many years, coaches and athletes have sought to improve power in order to enhance performance. In recent years, this distinct method of training for power or explosiveness has been termed plyometrics Chelly et al. (2001) suggested that the power that an individual can develop depends on both force and velocity, as determined by friction-loaded ergo meters. Plyometrics is a type of training involving jumping; bounding and other high impact exercises that focus on maximizing the stretch reflex of the muscles. To teach the muscles to produce maximum force faster this enhances performance for.

## Methods And Procedures

### Selection Of The Subjects

To achieve the purpose of this study thirty subjects were randomly selected from Alagappa model school boys Karaikudi, Tamil Nadu. The subject's age ranged between 13-17 years only. They were randomly selected in thirty students divided into three equal groups. Modified training group, plyometric training group were considered as two experimental groups and the other group was control group. All the subjects were healthy and physically fit. The nature and importance of the study was explained to the subjects and subjects expressed their willingness to serve as subjects in this study. The study was formulated as pre and post test pre experimental design.

### Selection Of Variables

Keeping in mind the role of various physical and physiological variables. Availability of equipments and the feasibility aspects their measurement the following variables were selected for their study.

#### DEPENDENT VARIABLES

##### PHYSICAL VARIABLE

Leg explosive power

##### PHYSIOLOGICAL VARIABLE

Vo<sub>2</sub> max

#### INDEPENDENT VARIABLES

Experimental group I - Plyometric training

Experimental group II - Modified training

Control group - No training

The list of selected physical variables and respective tests used for the study

Sl. No.	Variables	Test	Unit of measurement
1	Leg explosive power	Standing broad jump	In meters
2	Vo <sub>2</sub> max	Step Test	ml/kg <sup>-1</sup> /min <sup>-1</sup>

### Training Programme

Ten participants underwent a supervised this training program lasting for twelve weeks, three days per week, with a 30-minute structured exercise session. Each session consisted of a warm-up, an aerobic phase, and cool down. The exercise intensity was individually prescribed using a plyometric but within 50%–75% of the maximal heart rate range for participants. A 12-week plyometric-training program was developed that included weekly three days training sessions. 1. Single leg and double leg jump; 2. Alternative leg jump; 3. Side hop jump; 4. Lateral cone hops these exercises were performed for the duration of the training periods 60 minutes. The same duration of modified exercises such as sit ups, pull ups, modified sit ups, abdominal crunch and push up and rotation.

### Statistical Techniques

Analysis of co-variance statistical Technique was used to test adjusted post-test means difference among the experimental group. If the adjusted post rest result was significant the scheffe's post hoc was used to determine the significance of the period mean difference **Clarke. H. Harrison and divid.**

## Analysis And Discussions

TABLE- I Analysis of Covariance for the pre and post-test data on Leg Explosive Power (Scores in meters)

Test	Plyo metric training	modified training	Control group	Sov	Sos	Df	Ms	F ratio
Pre test mean	1.22	1.20	1.21	B	0.003	2	0.001	0.026
				W	1.39	27	0.052	
Post test mean	1.93	1.94	1.22	B	3.36	2	1.68	27.36*
				W	1.65	27	0.061	
Adjusted post test mean	1.92	1.94	1.21	B	3.43	2	1.71	54.43*
				W	0.820	26	0.032	

\*Significant at 0.05

(Table F-value at 0.05 level of confidence for 2 and 27 (df) =3.35, 2 and 26 (df) =3.37)

Table I shows that the pre test F value 0.026 was less than the required table value of 3.35 to be no significant at 0.05 level. The post test scores analysis proved that there was significant difference between the groups, as they obtained F value 27.36 was greater than the required table value of 3.35. This proved that the differences between the post test means of the subjects were significant. The Adjusted post F value of 54.43 was greater than the required table value of 3.37. This proved that there were significant differences among the means due to twelve weeks Modified training and plyometric training on leg explosive power.

TABLE –II Analysis of Covariance for the Pre and Post-Test Data on Vo<sub>2</sub> Max(Beats per minute)

Test	Plyometric training	modified training	Control group	Sov	Sos	df	Ms	F ratio
Pre test mean	48.90	46.60	45.60	B	57.26	2	28.63	2.23
				W	345.70	27	12.80	
Post test mean	51.80	49.85	45.20	B	229.93	2	114.96	8.96*
				W	346.23	27	12.82	
Adjusted post test mean	50.11	50.23	46.49	B	84.14	2	42.07	16.67*
				W	65.61	26	2.52	

\*Significant at 0.05

(Table F-value at 0.05 level of confidence for 2 and 27 (df) =3.35, 2 and 26 (df) =3.37)

Table II shows that the pre test F value 2.23 was less than the required table value of 3.35 to be no significant at 0.05 level. The post test scores analysis proved that there was significant difference between the groups, as they obtained F value 8.96 was greater than the required table value of 3.35. This proved that the differences between the post test means of the subjects were significant. The Adjusted post F value of 16.67 was greater than the required table value of 3.37. This proved that there were significant differences among the means due to twelve weeks Modified training and plyometric training on vo<sub>2</sub> max.

TABLE-III Scheffé's Post - hoc Test for Mean Differences between Groups

	Plyometric Training	Modified Training	Control Group	Mean Differences	C.I Value
Leg Explosive Power	1.92	1.94	-	0.02	0.09
	-	1.94	1.21	0.73*	
	1.92	-	1.21	0.71*	
Vo <sub>2</sub> Max	50.11	50.23	-	0.12	0.83
	-	50.23	46.49	3.74*	
	50.11	-	46.49	3.62*	

\* Significant at .05 level

Table - III shows that mean difference in leg explosive power between Modified Training and Plyometric Training 0.02 the less than CI value of 0.09. There was no significant. Modified Training and control group 0.73 and Plyometric Training and control group 0.71 greater than CI value of 0.09. There was a significant difference between groups. The mean difference in vo<sub>2</sub> max between Modified Training and Plyometric Training 0.12 the less than CI value of 0.83. There was no significant. Modified Training and control group 3.74 and Plyometric Training and control group 3.62 greater than CI value of 0.83. There was a significant difference between groups.

### Conclusion

There would be a significant improvement for both the training group after their respective training programme. Plyometric training group significant improvement in leg explosive power and vo<sub>2</sub> max compared to control group. Modified training group significant improvement in leg explosive power and vo<sub>2</sub> max compared to control group. There would be a no significant difference between plyometric training and Modified training on leg explosive power and vo<sub>2</sub> max.

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## Prediction Of Kabaddi Playing Ability From Selected Motor Fitness Components Among College Male Students

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### **Abstract**

The study was proposed to predict kabaddi playing ability from selected motor fitness components among college male students. To achieve this purpose of the study selected one hundred and sixty five kabaddi players from Acharya Nagarjuna University area Andhra Pradesh, India, in the age group of eighteen to twenty three years degree college players were selected as subjects. The kabaddi playing ability was selected as criterion variable, and the motor fitness components (*explosive power, agility, speed, and speed endurance*) were considered as independent variables in this study. The standardized means and methods were used to assess the selected criterion and determinant variables. The data thus collected were statistically examined by applying Pearson product moment coefficient of correlation to find out the existence of significant relationship and multiple regression analysis to analyze the predominant factors. The  $\alpha$  value of 0.05 was set for statistical significance. The outcome of the study demonstrates that statistically significant relationship subsists between kabaddi playing ability and selected motor fitness components, and establishes that the kabaddi playing ability can be predicted on the basis of agility and explosive power.

Keywords: kabaddi, motor fitness components.

### **Introduction**

In today's age of scientific knowledge man is making rapid progress in all walks of life and it is true in the area of games and sports. Sports performance is indeed an aspect of complex human performance, which has several dimensions. Sports scientists often acknowledge that a world-class performance is the result of several factors, advocating a multidimensional approach in studies on talented players (Regnier *et al.*, 1993; Reilly *et al.*, 2000). Burwitz *et al.* (1994) also recommend interdisciplinary performance-related sports science research.

There are two predominant methods that broadly capture how talented athletes are currently identified within sport: (a) natural selection, and (b) scientific selection (Bompa, 1999). 'Natural selection' is aimed at identifying talented individuals that are already participating within a sport due to the recognition of performance or scouting. As such, 'natural selection' processes rely on talented individuals to 'happen upon' the sport they are most likely to excel in even though involvement may result purely from peer or parental interests, proximity of facilities, or of the sport's popularity in that geographical area.

Greenberg (1999) reported that young athletes are less likely to become involved in less popular sports, even though their talent may be greater within these sports. Whilst the ability of scouts or coaches to identify talented individuals should never be underestimated, it is a very subjective process (Williams & Reilly, 2000), and the odds against identifying children who have the talent to become a successful adult performer are likely to be enormous.

Identifying attributes that characterize exceptional performers has interested researchers for many years (e.g., Regnier *et al.*, 1993). When individuals excel at international sporting events, questions are often asked with regards to what factors enable the athlete to produce such outstanding performance.

Successful performance in sports is influenced by morphological and anthropometric characteristics such as body size and composition, functional parameters (*physical capacity*) (Scott, 1991; Singh *et al.*, 2010) and fitness (*strength, speed, anaerobic and aerobic capacity, agility*) (Nikitushkin & Guba, 1998). The ability of a player in a team game like kabaddi emanates from various anthropometric and physical fitness parameters of the players.

It would be of interest to identify the motor fitness components that predicts playing ability of kabaddi players, as there has been a scanty of research with regard to it. Hence, the investigator is motivated to determine the motor fitness components that evolve the sports playing ability. The present paper was proposed to predict kabaddi playing ability from selected motor fitness components among college male students.

#### Methods and Procedures

One hundred and sixty five kabaddi players selected from degree colleges, Acharya Nagrjuna University area Andhra Pradesh, India, in the age group of eighteen to twenty three years players were selected as subjects with an informed consent. The study was restricted to the objective assessment of selected motor fitness components (*explosive power, agility, speed, and speed endurance*) and subjective rating of playing ability by judges. The motor fitness components were assessed utilizing calibrated instruments, standardized methods, procedures and tests.

The experimental design used in this study was cross sectional design involving convenient sampling for selecting the subjects of the study. The data thus collected were statistically examined by applying Pearson product moment coefficient of correlation to find out the existence of significant relationship and the procedure of stepwise method of multiple regression analysis to analyze the predominant factors. The  $\alpha$  value of 0.05 was set for statistical significance.

#### Results

The descriptive analysis of the data collected on various determinant and criterion variables is presented in Table 1.

Table 1: Descriptive Statistics

	Mean	Std. Deviation
Explosive Power	58.02	1.55
Agility	11.75	0.72
Speed	5.83	0.38
Speed Endurance	13.38	0.32
Kabaddi Playing Ability	7.81	0.89

Source: Primary data

The relationship between the criterion and determinant variables and inter relationship between determinants variables were calculated using the method of Pearson product moment correlation. The correlation coefficients thus obtained is presented in Table 2.

Table 2 reveals that the correlation coefficients of the criterion variable with the determinant variables vary from 0.852 for explosive power to -0.949 for agility. The correlation coefficient of the kabaddi playing ability with explosive power, agility, speed, and speed endurance, ensures a significant relationship at 0.01 level of confidence, since the obtained coefficient of correlation is greater than the required table value of 0.160 and 0.209 respectively at 0.05 and 0.01 level for 163 degrees of freedom.

Table 2: Correlation Matrix

	<b>Explosive Power</b>	<b>Agility</b>	<b>Speed</b>	<b>Speed Endurance</b>	<b>Kabaddi Playing Ability</b>
<b>Explosive Power</b>	1.000	-.931**	-.889**	-.831**	.852**
<b>Agility</b>		1.000	.970**	.953**	-.949**
<b>Speed</b>			1.000	.950**	-.913**
<b>Speed Endurance</b>				1.000	-.927**
<b>Kabaddi Playing Ability</b>					1.000

Source: Primary data

\* Significant at 0.05 level. Table value required for significance is 0.160.

\*\* Significant at 0.01 level. Table value required for significance is 0.209.

High multiple correlation results when the determinant variables correlate high with criterion, whereas, low correlation between determinant variables (Clarke & Clarke, 1987). The stepwise multiple correlations was utilized to select the minimum number of independent variables that would provide the highest multiple correlations coefficient with the criterion variable and to select them in the order of priority to the correlation.

The process of Stepwise multiple regression analysis is presented in Table 3.

**Table 3: Regression Analysis of Selected Motor Fitness Components**

<b>Predictors</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error</b>	<b>%Common Variance</b>	<b>F</b>
<b>Agility</b>	.949	.900	.899	.28154	68%	1.467E3
<b>Agility, Explosive Power</b>	.952	.907	.906	.27228	70%	790.210

Source: Primary data

In the process of computing multiple correlations on kabaddi playing ability, selected motor fitness components namely: agility and explosive power were selected with the zero-order correlation coefficient of -0.949 and 0.852. Out of the four independent variables, two variables were selected to derive stepwise multiple regression equation by obtaining a higher multiple correlations.

The obtained R<sup>2</sup> value of 0.907 denotes that agility and explosive power having 70% common variance with kabaddi playing ability and the corresponding F ratio of 790.210 is significant at 0.05 level.

The results of the study indicate that kabaddi playing ability can be the composite effect of selected motor fitness components. Thereby, the equation that derives kabaddi playing ability is as follows:

$$\text{Kabaddi Playing Ability} = 32.365 - 1.443 (\text{Agility}) - 0.131 (\text{Explosive Power})$$

As early as the 1920s, researchers were examining the potential of anthropometric and physiological measures as discriminating factors between athletes involved in different sporting events. The motor fitness components such as explosive power, agility, speed, and speed endurance has been a fundamental prerequisite for better kabaddi playing ability. The motor fitness components are of enormous value for talent identification, as it is considered to be way for success. Profiling young children on 'innate' anthropometric and physiological measures will enable the identification of individuals who have the potential to be successful in a specific event (Petiot, Salmela, & Hoshizaki, 1987). The knack to categorize young people whose profile is consistent with that of elite players may improve the progress in sport of the person by giving information about future success.

## Conclusions

The outcome of the study demonstrates that statistically significant relationship subsists between kabaddi playing ability and selected motor fitness components, and establishes that the kabaddi playing ability can be predicted on the basis of agility and explosive power.

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## Comparative Analysis Of Gujarat State Junior Power Lifter's Performance

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### **Introduction:-**

Man has been displaying his strength from time immemorial by throwing stones, lifting heavy logs of wood, etc. With passage of time, events like weight lifting, throw events evolved. Going further on this line, Power lifting was born. In the event of power lifting players have to lift a weight by the means of games like squat, bench press and dead lift which fall in the group of body weight. Result in such games shows evaluation of strength, capacity of muscles of players. It is believed that body parts like back muscles, shoulder muscles, thigh muscles and muscles of hands and feet of players with good performance in power lifting are very strong. Various factors like training, practice, heritage affect strength of muscles. (Singh Hardayal, 1984)

### **Sample :-**

For this, total 21 men power lifters, were selected from Gujarat State junior power lifting championship 2016-17 held at Ahmedabad. They were the position holders up to 3<sup>rd</sup> position of various 53 Kg., 59 Kg., 66 Kg., 74 Kg., 83 Kg., 93 Kg. and 105 Kg. body weight groups. The age of the subjects ranged from 18 to 23 years.

### **Procedure :-**

For this study, 53 and 59 Kg. body weight groups in light body weight category, 66 Kg., 74Kg., and 83Kg. body weight groups in medium body weight category, 93 and 105 Kg. body weight groups in heavy body weight category in Gujarat State junior power lifting championship 2016-17. Average of up to first three rankers from each group and each Squat, Bench Press and Dead lift event was worked out. A comparative study was done considering average of junior men participants from each group and each event.

### **Statistical Analysis :-**

The relevant data received from the results of the Gujarat State men junior power lifting championship 2016-17 were evaluated according to statistical average method and analysis, because average method is the best statistical method for comparison

### **Results :-**

In order to determine the significance of difference in the performance of Gujarat State men junior power lifters. The results of category wise and event wise performance were compared. The comparative results are shown in Table -1.

Table -1 Significance of difference between the category wise and event wise performance of Gujarat State junior men power lifters.

Body weight category	No.	Squat Average performance in kg.	Bench Press Average performance in kg.	Dead lift Average performance in kg.	Gross average performance in kg.
Light (53 & 59 kg.)	06	111.67	72.08	139.17	322.92
Medium (66, 74 & 83kg.)	09	144.44	96.94	178.33	419.71
Heavy (93 & 105 kg.)	06	158.75	114.17	197.50	470.42
Gross Average performance in kg.	03	138.29	94.40	171.67	404.35

Viewing table -1, It is seen that the best performances was achieved in light body weight category in Dead lift event (139.17 Kg.), There after comes performance in Squat event (111.67 Kg.) followed by Bench press event (72.08 Kg.).

Table -1 also reveals that in the medium body weight category, best performance was achieved in Dead lift event (178.33 Kg.), followed by Squat event (144.44 Kg) and the last in Bench press (96.94 Kg.).

Also seen in Table -1 is the performances of heavy body weight category with best performances in again Dead lift event (197.50 Kg.), followed by Squat event (158.75 Kg.) and the last performances was seen in bench press (114.17 Kg.).

Table -1 reveals event wise performance of various body weight categories, too....

In Squat event, heavy weight category performed the best with 158.75 Kg., followed by medium weight category 144.44 Kg., still followed by light weight category 111.67 Kg.

In Bench press event, heavy body weight category performed the best with 114.17 Kg., followed by medium body weight category (96.94 Kg.), There after comes light body weight category with 72.08 Kg.

In Dead lift event, heavy body weight category performed the best with 197.50 Kg., followed by medium body weight category (178.33 Kg.), to be followed by light body weight category with 139.17 Kg.

In view of event wise gross average performance, Dead lift event showed the best gross average performance with 171.67 Kg., followed by gross average of Squat event with 138.29 Kg., there after come the gross average of Bench press event with 94.40 Kg.

In view of body weight category wise gross average performance heavy body weight category performed with best gross average of 470.42 Kg., followed by medium body weight category with 419.71 Kg., gross average of Squat, Bench press and Dead lift events. The last gross average performance of Squat, Bench press and Dead lift event is that of light body weight category with 322.92 Kg.

#### **Discussion :-**

Viewing above result, we can see comparative body weigh category wise and event wise difference among power lifters. It is believed that power lifter with better performance have more strength of muscles and conversely, less strength of muscles is related to power lifters with comparatively poorer performance in event wise and body weight category wise also.

#### **Conclusion :-**

The analysis of data revealed that there is a significant difference in relative strength of various categories of power lifters. It is established that various categories of lifters possess different levels of relative strength. This may be probably due to the different nature of training and pre-requisite components for lifters. Such results may be due to other factors such as different body type, different in the body composition, different geographic backgrounds etc.

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## Implementation Of Data Mining Techniques In Sports

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### **Abstract**

Data mining techniques have been applied in various fields such as business, retail, medicine, telecommunications, biotechnology etc. In the sport domain, data mining techniques can be used to plan effective training sessions to improve the performance of a sports person. The paper proposed a model which uses clustering techniques to analyze physiological data of the sports person. A couple of tests are performed on the sports person to check the performance of the sports person under incremental strain. The data collected during these tests are analyzed which help the coaches and the mentors to develop and plan the training sessions accordingly, so that the athlete can improve their performance. Keywords-data mining techniques, clustering techniques, sports domain

### **Introduction:**

Data mining is a technique used for extracting knowledge from information. Data analysis tools can be used to derive hidden patterns from large amount of information. There In the domain of sports, data mining methodologies can be applied to extract knowledge from sports information. Coaches and mentors can use this knowledge for sports training of the sports person, so that a sports person can win in their respective sports

Data is collected from the players, by performing various test to the three physical conditions of the players and the ability of the player to perform under strain. By using this knowledge extracted by data mining techniques, coaches can use the information to plan training and also to predict the performance of the player under incremental strain

In this paper, we propose a framework for data mining to evaluate the performance of the athlete under pressure using the clustering techniques

#### **A. CLUSTERING TECHNIQUES**

Clustering is one of the most important unsupervised learning problem

It is the process of organizing in such a way that objects in the same group are more similar to each other than to those in other groups. The groups are called as the clusters

In this paper we have used hierarchical approach and K-Means approach for clustering. Hierarchical algorithms. The below figure shows the framework of the proposed model

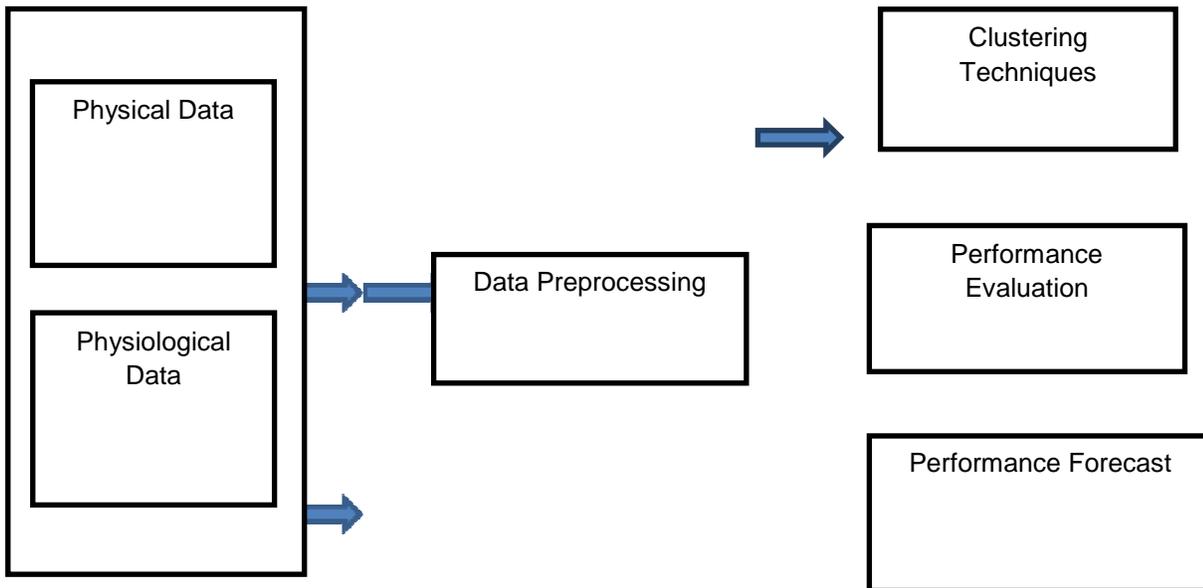


Figure 1: The Framework

## Methodology

### A. Data collection

Data had been collected by performing a couple of tests. To perform the test, an athlete was made to use the treadmill. During the test, the athlete was made to walk by increasing the power according to different levels. The incremental levels are assigned by the coaches or the trainers. Sensors are used to record the signals of his body under stress by increasing the level. The levels are increased incrementally to test the performance of the athlete under the strain

These tests were carried out till the athlete is no more longer able to perform at the maximum level. It is the final value of level provides the information on the strength of the athlete. The information recorded by the tests are the physical and physiological attributes of the athlete such as sex, age, weight etc and knowledge BMI as heart rate, oxygen consumption. This information can be used to compare the performances of different athletes

The Body mass index (BMI) is a measure of body fat based on your weight in relation to your height. It is defined as the person's bodyweight divided by the square of his or her height. The Body Surface Area (BSA) is the calculated surface of a human body.

The test is conducted on an athlete walking on a treadmill. The equipment will have different levels. During the test the athlete is supposed to walk where the levels are incremented. The increments are applied by the coach. In this incremental levels of tests, the performance of the athlete is monitored by body sensors. Sensors are applied to the athlete's body to collect physiological signals. The tests show the ability of the athlete to perform under increasing strain. After tests, many observations will be recorded

### B. Data Preprocessing

The next step is data preprocessing, which makes the data meaningful. Data preprocessing is a data mining technique used for transforming raw data into an understandable form. Data cleaning and data reduction are implemented in this step to remove the incomplete, noisy and inconsistent data. For example negative weight. Data reduction is the transformation of numerical or alphabetical digital information into a corrected, ordered, and simplified form. The basic concept is the reduction of multitudinous amounts of data down to the meaningful parts.

### C. Analysis

After the collection of data, different clustering approaches are applied on the data used. RapidMiner is used to implement it. Rapid Miner is a software tool used for performing data mining

After clustering is performed, we can get number of clusters. Then, for each cluster we get, we use hierarchical clustering .Rand index is used to compare two hierarchical clustering.

### Conclusion

In this paper, we have implemented data mining techniques in sports for data analysis.

Particularly, different clustering techniques have been used. Using this techniques, coaches and mentos can take appropriate decisions to help the athlete achieve their goals. The information also enables the coaches to predict the performance of the players under physical stress

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**Effect of Heart Rate on Shooting efficiency of Female Air pistol shooters (10 mts)**

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**Abstract**

Introduction: The main purpose of the study was to examine the Effect of Heart Rate on shooting efficiency of 10 meter Air Pistol Female shooters. Aim: To Inspect the co-relation between Heart rate and shooting Efficiency of Female National Shooters aged 15-23 Years. All subjects, which have been selected for sampling, participated in National or International level competitions. Material & Methods: To attain the aim of the study 35 female shooters, Age group 15 to 23 years , have been selected from SAI centre Badal , District Shri Mukatsar Sahib (Punjab). Statistics: To evaluate the co-relation between Heart Rate and Shooting Efficiency “co-relation” used with the help of SPSS software. The significance level was set at 0.05 or 0.01 . RESULT AND CONCLUSION: It has been seen that Heart rate( Before competition & MAX. H.R.) and Shooting efficiency negatively correlated of the national pistol shooters of 10M range in between the age group of 15-23 years.

KEYWORDS: Pistol shooters , SCAT , Anxiety , Shooting Efficiency etc.

**Introduction:**

Shooting is considered as one of the sports that can be taken up by any individual or participant regardless of age and sex for recreation and professional involvement. Anxiety is a common word , which we used in daily life. It is not about the particular job , work ,gender, age difference and department. It is an Emotion about each and every person. Sometimes people considered it as fear, Anxiety is different from fear. Anxiety plays an important role to do any work on the other hand higher level Anxiety destroy the focus of person in particular work .Sports differ from one another so all sports generate different amount and different type of Anxiety which affect the performance of sportsperson negatively or positively totally depends on the level of Anxiety and type of sport. *Anxiety is an Emotion characterized by feelings of tension , worried thoughts and physical changes like increased blood pressure.*

Heart rate:-Heart rate is the speed of Heart Beat . Heart Rate is evaluate by the number of contraction of the per minute. Heart Rate is different from body to body and condition to condition .it depends on physiological needs of the person. Environment plays important role for the Heart Rate. At High Altitude ,Sea level and underground Heart is vary in every condition. Heart Rate is different during training , before competition , during competition after competition. We can say that , Heart rate depends on many factors that factors effects the Heart Rate at different type of levels.

Efficiency: - It is an ability to do any work successfully and well mannered with comfortable feel. This word often use in every field to do things in right way with their possible efforts. Shooting efficiency is related with the ability of pistol shooters regarding shoot on the target.

**Material & Methods:**

The female pistol shooters numbering about 35 have been selected as a subject for the conduct of present study. All the female shooters are in the age group of 15-23 years, who have participated at national and international level. Evaluate the Resting heart rate of the subject investigated with the help of Heart Rate monitor. Efficiency of pistol shooting investigated by used 10 bullets hit in the target. Pistol Shooters (10M) were selected for the sample and data gathered from SAI Training Centre Pistol & Rifle Shooting Range, Village Badal district Mukatsar Sahib (Punjab).

Following steps have been taken in procedure for tools for measurement of desired Psychological & Physiological variables in materials & methodology, as shown in table no.1.

Table No.1: Psychological Variables used for the measurement of Shooting Efficiency

S.NO	VARIABLES	TEST ITEMS	UNIT OF MEASUREMENT
1	EFFICENCY	10 SHOTS HIT IN TARGET	1 TO 10 NUMBER
2	BEFORE COMPETITON H.R.	HEART RATE MONITOR	BPM
3	MAX. H.R.	HEART RATE MONITOR	BPM

For the purpose of study, Resting Heart Rate of the subject investigated with the help of Heart Rate monitor. Efficiency of pistol shooting is investigated by using 10 bullets (1-10), hit in the target, by the shooter considered as the one of the parameter for the scoring.

**Result And Discussion:**

In analysis part the Mean and SD of Efficiency in shooting was found to be  $6.9 \pm 1.62$ , whereas Mean and standard deviation (S.D) of Max. H.R is  $82.20 \pm 5.73$ , and the Mean resting heart rate 77.03 bpm with the standard deviation (S.D) of  $\pm 6.30$  respectively as shown in Table No: 2 below.

Table No 2: Mean & SD of psychological variables of national female shooters aged between 15 to 23 years

S.NO.	PSYCHOLOGICAL PARAMETERS	MEAN	S.D.
1	Efficiency	6.29	1.62
2	Before competition H.R	77.03	6.30
3	During Competition Heart Rate	82.20	5.73

In Case of Correlation, The Pearson's Correlation was used to find out the co relation on the two parameters. It has been also shows that Heart rate (Before competition & MAX. H.R.) and Shooting efficiency negatively correlated of the national pistol shooters of 10M range in between the age group of 15-23 years, as shown in table No:3 below.

TABLE NO: 3 Co-relation of shooting efficiency and Heart Rate (Before Competition & Maximum)

VARIABLES	Efficiency	BEFORE COMPETITION HEART RATE	MAX.H.R.
Efficiency	1	-.021	-.219
Before Competition H.R.	-.021	1	.399
Max. H.R.	-.219	.399	1

### Conclusion

In conclusion, it has been calculated that the Heart rate (before competition & MAX.H.R.) of female pistol shooters negatively correlated with shooting efficiency of 10 meter air pistol shooters. Which reveals that if the heart rate is less performance of shooting will be enhanced and if the H.R. is more then, there will be the chances of decrease the performance of 10M female national pistol shooters of 10M range SAI centre Badal, in between the age group of 15-23 years.

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## Attitude Of Gujarat University Students Towards Physical Education And Sports

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### **Introduction :-**

President Lincoln states, 'Physical education is the education of the body, by the body and for the body'. All the educationists of the world have accepted that physical education can promote physical, mental, social and emotional development of an individual. (Solanki and Patel, 2001) Physical education endows students with so many lofty values and qualities like physical mental readiness, insight, discipline, co-operation, good moral character, respect, love towards others, nobility, good human relation, etc.,. Thus physical education plays an important and active role in national development. (Ramesh Patel and others, 2005). Physical education is an integral part of the total educational process. In the past, it was designated as an extra co-curricular activity but recently it has become a co-curricular activity, a part of curriculum which provides the necessary curricular values and plays a vital role in achieving the educational objectives. Physical education and sports should be encouraged in the educational institutions because it provides an opportunity to develop physical skills, sportsman spirit, fair play, good citizenship, co-operation and positive attitude towards life. Apart from Ahmedabad, Gandhinagar, Kheda, Vadodara rural, Anand rural, Panchmahal, Dahod and Chhota Udepur district also come under the jurisdiction of Gujarat University. Educational college, institutions of Gujarat University are with a high literacy rate. Like males, female students are also getting ample opportunity to under graduate and post graduate courses in various subjects. Gujarat University is very famous for outstanding sports persons and sporting activities.

### **Materials and Methods :-**

Two hundred under graduate men students were selected randomly from different college of Gujarat University were taken as subjects. A questionnaire was constructed containing 40 questions covering different aspects of physical education and sports such as, academic, leadership and social. The questionnaire was administered to all the subjects to obtain their response. The responses of the subjects were obtained in a 5 point Likert scale. Percentage was calculated to analysis the response of the subjects according to their choice as like strongly agree, agree, undecided, do not agree and strongly disagree.

### **Results and Discussion :-**

The responses of the subjects were tabulated according to the aspects included in the questionnaire. The results were presented in the following tables.

Table -1:Attitude of Gujarat University under graduate men students towards physical education and sports –Academic aspects

Particulars	Strongly Agree		Agree		Undecided		Do not Agree		Strongly Disagree	
	No.	%	No.	%	No.	%	No.	%	No.	%
Physical education and Sports should be treated as other college subjects.	37	18.5	112	56	16	8	28	14	7	3.5
Compulsory physical education and sports period in college time table needed	28	14	110	55	13	6.5	40	20	9	4.5
Physical education and sports obstruct the study programme	30	15	48	24	16	8	86	43	20	10
Physical education and sports is disadvantage to other staff members	30	15	41	20.5	9	4.5	102	51	18	9
Physical education and sports cannot be done to the expected level because of facilities and climatic conditions	22	11	85	42.5	10	5	70	35	13	6.5

As per as the Academic aspects of the questionnaire, 56 % of the students agree that physical education and sports should be treated as other college subjects. 55 % of the under graduate also agreed to make compulsory physical education and sports period in the college time table. 43 % of the under graduate men students do not agree that physical education and sports obstruct the study programme. 51 % of the under graduate students did not agreed that physical education and sports is disadvantage to other staff members. 42.5 % of the under graduate students agreed that physical education and sports cannot be done to the expected level because of facilities and climatic conditions.

Table -2

Attitude of Gujarat University under graduate men students towards physical education and sports – Leadership aspects

Particulars	Strongly Agree		Agree		Undecided		Do not Agree		Strongly Agree	
	No.	%	No	%	No.	%	No.	%	No.	%
Physical education & sports provides opportunity for leadership	66	33	98	49	15	7.5	13	6.5	8	4
Physical education & sports teachers tolerance, obedience and respect	72	36	100	50	6	3	18	9	4	2
Physical education and sports makes one better citizen	60	30	112	56	10	5	12	6	6	3
Physical education & sports build up courage and confidence	70	35	90	45	22	11	10	5	8	4
Physical education & sports develop desirable standard of conduct	44	22	86	43	20	10	38	19	12	6
Physical Edu. & sports teachers to accept defeat with grace and victory with modesty	47	21	98	49	24	12	28	14	8	4

As for as the leadership Aspects of the questionnaire 49 % of the under graduate students agreed that physical education and sports provides opportunity for leadership. 50 % of the students agreed that physical education and sports teachers tolerance, obedience and respect. 56 % of the under graduate students also agreed that physical education and sports makes one a better citizen. 45 % of the students agreed that the physical education and sports build up courage and confidence amongst them. 43% of the students also agreed that physical education and sports develop desirable standard conduct. And 49 % of the students agreed that physical education and sports teachers to accept defeat with grace and victory with modesty.

Table -3 Attitude of Gujarat University under graduate men students towards physical education and sports – Social aspects

Particulars	Strongly Agree		Agree		Undecided		Do not Agree		Strongly Disagree	
	No.	%	No.	%	No.	%	No.	%	No.	%
Physical education and sports help the individual to maintain self discipline	40	20	88	44	10	5	52	26	10	5
There is notion among the people that sports men lose character	26	13	32	16	12	6	90	45	40	20
Physical education and sports make one socially desired person	80	40	97	48.5	10	5	11	5.5	2	1
Through physical edn and sports social character is cultivated	36	18	72	36	33	16.5	42	21	17	8.5
Physical education and sports bring unhealthy rivalry amongst students	28	14	48	24	32	16	78	39	14	7
Physical edn and sports help to adopt to group situations	44	22	108	54	30	15	15	7.5	3	1.5
Physical edn and sports helps in learning how to get along with people	66	33	96	48	10	5	21	10.5	7	3.5
Knowledge of sports makes one an understanding spectators	50	25	96	48	11	5.5	39	19.5	4	2

Regarding the social aspects of the questionnaire 44% agreed the physical education and sports help the individual to maintain self discipline. 45% of the students did not agree that there is notion among the people that sports men lose character. 48.5% of the students agreed for the statement that physical education and sports makes one socially desired person. 36% of the students agreed that through physical education and sports social character is cultivated. 39% of the under graduate students did not agree for physical education and sports bring unhealthy rivalry amongst students. 54% of the under graduate students agreed that physical education and sports help to adopt to group situations. 48% of the under graduate students agreed that physical education and sports helps in learning how to get along with people. And 48% of the students also agreed that the knowledge of sports makes one an understanding spectators.

**Conclusions :-**

Physical education and sports in no way interfere with academic work and it affects least in the study programme of under graduate men students and sports should be treated on par with the other subjects. Majority of the students are of the view that participation in physical education and sports development leadership qualities. Majority of the under graduate men students view that participation in physical education and sports makes one more socially desired person and build self discipline and help to adopt to group situations and get along with people.

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## **Effect of Cultural Diversity on Positive Mental Health of Female Tribal Sportspersons**

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### **Abstract**

The present study comparatively assessed positive mental health of female tribal sportspersons hailing from different parts of India. The sample consists of 250 national level female tribal sportspersons from Chhattisgarh, Maharashtra, Himachal Pradesh, Odisha and Uttarakhand respectively. Equal weightage was given to each selected state while selecting the sample. PMHI prepared by Agashe and Helode (2007) was used to assess positive mental health of national female tribal sportspersons. The result reveals statistically non-significant difference in positive mental health of female tribal sportspersons with domicile of Chhattisgarh, Maharashtra, Himachal Pradesh, Odisha and Uttarakh respectively. It was concluded that positive mental health among national female tribal sportspersons is not influenced by their cultural belongingness.

Keywords : Positive Mental Health, Female Tribal Sportspersons, Culture

### **Introduction**

Sportspersons from tribal population of India has a fair share of participation in sports. It has also been observed that tribal sportspersons from specific States of India have excelled more in sports as compared to other tribal pockets. It may be due to physiological, psychological, anthropometric or biomechanical supremacy of tribal sportspersons from some specific part of India as compared to tribal sportspersons from other regions. The researcher addressed one of the psychological issue by studying the positive mental health of national female tribal sportspersons on the basis of cultural differences. The importance of positive mental health in life and sports settings has been very well documented. Chaplin (1975) propagated positive mental health in a scientific way. Later Strupp and Hadley (1977) included self-acceptance, ego strength and philosophy of life for assessment of positive mental health. Keyes (2002) wrote in his essay about the emerging literature on positive mental health and wellbeing considers emotional or feeling, cognition or thinking as its integral elements. Recently studies by concluded that sports performance is associated with positive mental health (Tiwari and Agashe, 2015). Despite numerous psychological studies on tribal sportspersons the focus was mainly to compare them with non tribal sportspersons [Thakur (2012), Patil (2013), Singh et al. (2013), Agashe and Shambharkar (2014)]. Since tribal sportspersons in India comes from different regions and they have bound to have cultural difference due to ethnicity. Keeping these facts in mind, the researcher decided to assess positive mental health among tribal female sportspersons who are yet to be assessed on the basis of their cultural diversity.

## Hypothesis

In the present study it was hypothesized that cross cultural variation will influence positive mental health of female tribal sportspersons.

## Methodology :-

The following methodological steps were taken in order to conduct the present study.

Sample :-

To conduct the study total 250 female tribal sportspersons were selected as sample. Out of these 50 female tribal sportspersons from Chhattisgarh (Ave. age 21.68 yrs.), 50 female tribal sportspersons Maharashtra (Ave. age 20.26 yrs.), 50 female tribal sportspersons Himachal Pradesh (Ave. age. 22.96 yrs.), 50 female tribal sportspersons Odisha (Ave. age 20.28 yrs.) and 50 female tribal sportspersons Uttarakhand (ave age. 19.88 yrs) were selected. The selected female tribal sportspersons have the credentials of participation in inter-university/national competitions in any sporting event. Purposive sampling method was used in the present study.

Tools:

Positive Mental Health Inventory : To assess positive mental health of selected tribal female sportspersons, three dimensional positive mental health inventory prepared by Agashe and Helode (2007) was used. It consists of 36 questions. The test-retest reliability coefficient of this inventory was 0.723. Higher the score, superior the positive mental health is the direction of scoring.

Procedure:

250 inter-university and national level female tribal sportspersons with a domicile of Chhattisgarh, Maharashtra, Odisha, Himachal Pradesh and Uttarakhand respectively were selected, with equal representation of subjects from each state. PMHI prepared by Agashe and Helode (2007) was administered to all selected subjects keeping in mind their availability and convenience. After scoring of the responses according to author's manual, the data was tabulated according to their respective groups. To compare positive mental health of female tribal sportspersons from Chhattisgarh, Maharashtra, Odisha, Himachal Pradesh and Uttarakhand, One Way ANOVA was applied. Analysis of data is depicted in table 1 and 2 respectively.

## Analysis Of Data

Table 1 Descriptive Statistics of Positive Mental Health Scores in Female Tribal Sportspersons from Chhattisgarh, Maharashtra, Himachal Pradesh, Odisha and Uttarakhand (N=250)

Groups	N	Positive Mental Health		
		Mean	S.D.	Standard Error
Female Tribal Sportspersons- Chhattisgarh	50	20.30	4.38	.620
Female Tribal Sportspersons- Maharashtra	50	18.76	3.27	.463
Female Tribal Sportspersons- Himachal Pradesh	50	18.76	3.88	.549
Male Tribal Sportspersons- Odisha	50	19.70	3.41	.483
Male Tribal Sportspersons- Uttarakhand	50	19.28	2.45	.347

Table 2  
ANOVA Summary  
Cross Cultural Comparison of Positive Mental Health in Female Tribal Sportspersons

Source	df	Sum of Squares	Mean Squares	F	Sig.
Between Groups	04	86.280	21.570	1.71	p>.05
Within Groups	245	3077.320	12.560		
Total	249	3163.600			

Results obtained through One Way ANOVA indicate that positive mental health did not vary significantly between female tribal sportspersons with a domicile of Chhattisgarh, Maharashtra, Himachal Pradesh, Odisha and Uttarakhand. [F=1.71, p>.05] This result is also confirmed by Least Significant Difference

Test presented in table no. 2.

Table 2 Comparison of Mean Scores on Positive Mental Health Inventory among Tribal Female Sportspersons from Chhattisgarh, Maharashtra, Himachal Pradesh, Odisha and Uttarakhand Least Significant Difference Test with Significance Level .05

Mean (I)	Mean (J)	Mean Difference (I-J)
Tribal Female Sportspersons – Chhattisgarh	Tribal Female Sportspersons- Maharashtra	1.54*
	Tribal Female Sportspersons- Himachal Pradesh	1.54*
	Tribal Female Sportspersons- Odisha	.60
	Tribal Female Sportspersons- Uttarakhand	1.02
Tribal Female Sportspersons - Maharashtra	Tribal Female Sportspersons- Himachal Pradesh	0.00
	Tribal Female Sportspersons- Odisha	-.94
	Tribal Female Sportspersons- Uttarakhand	-.52
Tribal Female Sportspersons- Himachal Pradesh	Tribal Female Sportspersons- Odisha	-.94
	Tribal Female Sportspersons- Uttarakhand	-.52
Tribal Female Sportspersons- Odisha	Tribal Female Sportspersons- Uttarakhand	.42

\* Significant at .05 level

Table 22 draws following inferences:

- Positive mental health of tribal female sportspersons from Chhattisgarh (M=20.30) was found to be significantly superior as compared to tribal female sportspersons from Maharashtra and Himachal Pradesh.

- Statistically non-significant difference was observed on positive mental health between tribal female sportspersons from Chhattisgarh and Odisha as well as tribal female sportspersons from Chhattisgarh and Uttarakhand. Statistically non-significant difference was observed on positive mental health between tribal female sportspersons from Maharashtra and Himachal Pradesh; Maharashtra and Odisha as well as between female tribal sportspersons from Maharashtra. Statistically non-significant difference was observed on positive mental health between tribal female sportspersons from Himachal Pradesh and Odisha as well as between female tribal sportspersons of Himachal Pradesh and Uttarakhand. Statistically non-significant difference was observed on positive mental health between tribal female sportspersons from Odisha and Uttarakhand

On the basis of analysis of data, following results are obtained:

#### **Results :**

- On the basis of data analysis it was found that by an large positive mental health of female tribal sportspersons from Chhattisgarh, Maharashtra, Odisha, Himachal Pradesh and Uttarakhand did not differ significantly with each other.

#### **Discussion:**

Kramer et al. (2002) scientifically documented that language, age, gender and geographical conditions along with rituals prevalent in that particular area/culture affect mental health. But in the present study positive mental health of tribal female sportspersons from Chhattisgarh, Maharashtra, Odisha, Himachal Pradesh and Uttarakhand did not differ significantly. The contradictory result may be due to nature of variable which is positive mental health encompassing self acceptance, ego strength and philosophy of life and also may be due to the same level of participation of selected subjects.

#### **Conclusion**

On the basis of results, it can be concluded that culture do not influence positive mental health among female tribal sportspersons.

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## **Correlation Between The Status Of Sports Facilities And The Performance And Level Of Motivation Of Athletes**

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### **Abstract**

This study aimed to determine the correlation between the status of sports facilities and the performance and level of motivation of athletes. Specifically, it sought to know the status of the existing sport facilities, the level of motivation of the athletes, the performance of the athletes on their different sports event, and significant relationship between the status of facilities, performance, and level of motivation of athletes. The study utilized the descriptive method of research. The respondents were 136 lined-up athlete-respondents given by the Sport Development Office (SDO) at Polytechnic University of the Philippines. The researchers used a survey questionnaire to assess the athletes of Polytechnic University of the Philippines. The frequency, percentage distribution, Cross tabulation, person correlation and spearman rho was used. Findings revealed that the majority of the athlete-respondents agree that the number of the athletes using the Gymnasium during training is over populated during training activities and there is a need for improvement and changes on the sports facilities of the university. On the level of motivation of the athletes, they agree that facilities help the athletes improve their skills and performances, to be motivated, and to enjoy while accomplishing their goals. On the level of performance of the athletes only the badminton team was consistent in winning the championship from the year 2011 – 2014. While on the level of significant relationships, there is a significant relationship between the sport facilities and motivation of the athletes, but on the other hand there is no significant relationship between the sport facilities and the performance of the athletes.

Keywords: Correlation, Level of Motivation, Sports Facility, Sports Performance

### **Introduction**

Sports facility has been defined as construction, field and area which has units (such as stand, toilet, sink, shower, dressing room) suitable for performing specific practices of sports activities and branches for trainings and national and international events, meeting the need of sportsperson and audience before sport activities (Nacar, 2013). The Philippines, being a colony of Western countries traces its sports practice from Western sports tradition. This is to say that most of the sports played in the country are not actually locally conceptualized. Rather, they are adopted from the former colonizers. One clear example of this is basketball which most Filipinos are familiar with. The said sport was brought by the Americans. Though the contemporary Philippine sports are ultimately traceable to the western world, the sports development programs (SDP) are currently implementing a consideration to Filipino athletes to address the needs of the Filipino athletes and the sports community as a whole. These SPDs which are largely employed by universities conceptualized the intent of the 1987 constitution to develop Filipinos who are healthy in mind and in body. Hence, these SPDs are of vital importance to our society.

It is said on the SECTION 2. Declaration of Policy, of the Philippine Sports Commission (2000), that it is the policy of the State to promote physical education, encourage and sustain the development of sports in the country to foster physical fitness, self-discipline, teamwork and excellence for the development of a healthy and alert citizenry through a unified national sports promotion and development program, and that the establishment and creation of a single, unified and integrated national sports policy-making body shall further this objective.

The creation of universities and colleges throughout the country has been allocating funds for their SPDs. It is written on SECTION 11 of the REPUBLIC ACT NO. 5708 also known as "The Schools Physical Education and Sports Development Act of 1969" that there shall be an athletic fee not exceeding ten pesos per annum charged to each college and university student, in both public and private, the total sum collected each year to be expended exclusively for the promotion of the schools' physical education and sports center development program. No other athletic fee of any kind or under any denomination whatsoever; shall be charged by any school, public or private.

These funding mainly go to the construction of sports facilities. In this respect, the sports officials and policy makers in the universities need to have empirical evidences that would rationalize the apportionment of funds for SPDs.

The availability of adequate equipment and facilities plays a major role in sports development. It would not be important to achieve satisfactory results from athletes, whose training facilities are inadequate or substandard which in actual fact will not compliment the work of the coach. Good sports programs can function at full effectiveness only when they are supported with effective equipment in good conditions (Aluko,1999).

In this regard, the study aimed to determine the correlation between the status of sports facilities and the performance and level of motivation of athletes. Specifically, it sought to know; (1) the status of the existing sports facilities; (2) the assessed level of the motivation of respondents in relation to the sports facility; (3) the performance of the PUP athletes; and (4) if there is a significant relationship between the status of a sports facility and the performance and motivation of the athletes?

### **Theoretical Framework**

Extrinsic motivation is the overarching theory or theoretical construct that affects the present study. Extrinsic motivation refers to the performance of an activity in order to attain desired outcome and it is the opposite of intrinsic motivation (Ryan & Deci, 2000). Extrinsic motivation comes from influences from the individual's environment. In extrinsic motivation, the harder question to answer is where do people get the motivation to carry out and continue to push with persistence. Usually, extrinsic motivation is used to attain outcomes that a person may not get from intrinsic motivation. Common extrinsic motivations are rewards (for example money or grades) for showing the desired behavior, and the threat of punishment following misbehavior. Competition is an extrinsic motivator because it encourages the performer to win and to beat others, not simply to enjoy the intrinsic rewards of the activity. A cheering crowd and the desire to win a trophy are also extrinsic incentives (Dewani, 2013).

In studying the correlation of the sports facilities and athletic motivation and performance, this theoretical construct is very relevant. The extrinsic motivator becomes the sports facilities and the affected agent or the cause is the performance and level of motivation of the athlete.

### **Method**

The researchers made use of the descriptive method of research. The descriptive research method was employed to gather information about present existing condition (Birion, De Jose, Dayrit, and Mapa, 2005). Purposive sampling was utilized to include 136 line-up athletes from different events who use the PUP gymnasium during their training. The athlete-respondents consist of 69 males and 67 females of Polytechnic University of the Philippines, Manila who were lined-up in seven different indoor sport events. Most of the athletes are Bachelor in Physical Education majors, first to second year students, ranging from 16-21 years old.

The researchers used adopted questionnaire from the study "Motivation and Amotivation of Team Sports Athletes of Selected Local Government Funded Universities: Basis for Athlete Motivation Program" by Rolly C. Dela Cruz (2012) rated on a 4-point Likert type scale for data collection.

The data gathered were categorized, interpreted, and analyzed with the use of frequency counts, percentage, and weighted mean. Moreover, Pearson correlation coefficient was used to determine the significant relationship of the status of the facility to the Level of Motivation of the athletes and Spearman Rho in determining the significant relationship of the status of the facility to the Level of Performance of the athletes from 2011 – 2014.

### **Results and Discussion**

Findings revealed that although the gymnasium is always available during training and trainings are scheduled first before using, majority of the athlete-respondents agree that, "the number of the athletes using the Gymnasium during training is over populated" with 2.31 weighted mean. On the other hand, the athletes disagree that "There is no need for improvement and changes on the sports facilities" with a weighted mean of 3.21.

**Table 1 Assessed Status of Existing Facilities**

Statements	Mean	Verbal Interpretation	Rank
The Gymnasium of the PUP is always available during trg	2.39	Agree	3
The facilities like Gymnasium are properly lighted.	2.64	Disagree	6.5
The Gymnasium of the PUP is properly maintained.	2.63	Disagree	4.5
The Gymnasium and other sports facilities in PUP are always neat and presentable when you use it during class and training.	2.63	Disagree	4.5
The trainings are scheduled first before using the Gymnasium/facilities.	2.36	Agree	2
The PUP Gymnasium is properly ventilated.	2.65	Disagree	8
The environment and space of every sports facility is good.	2.76	Disagree	9
There is no need for improvement and changes on the sports facilities.	3.21	Disagree	10
The Gymnasium of the PUP is safe to use during training.	2.64	Disagree	6.5
The number of the athletes using the Gymnasium during training is over populated.	2.31	Agree	1

These findings imply that, there is a problem on the scheduling of the training of the athletes in the gymnasium; according to the schedule given by the SPDO, there are six teams who train at the same in the gymnasium every Monday; four teams on Tuesday; 5 teams on Wednesday and Friday and three teams on Thursday. Even though it is accessible to everyone, it is also one of the reasons why the PUP's gymnasium is overcrowded. Beside of the athlete's training, the gymnasium also accommodates some of the regular P.E classes in the PUP. In the study of Baldevarona, et al., (2015) they found out that the problem encountered in the sports training program in Polytechnic University of the Philippines, both athletes and coach-respondents considered "inadequate facilities and equipment" was most common. The researchers believe in what Awoma (2015) claims that; the development of sports facilities should be planned and taken in phases having in view the various sports and the cultural interest of the people; while also, provision of sports equipment should be enhanced through planned annual target. And Government should solicit and encourage the interest of private individual for the development of sports

Table 2 shows the athlete-respondents' assessed level of the motivation of athlete-respondents in relation to the sports facility (gymnasium) in the Polytechnic University of the Philippines Sta. Mesa, Manila.

**Table 2 Assessed Level of the Motivation of Athlete-Respondents in relation to Sports Facility**

Statements	Mean	Verbal Interpretation	Rank
The facilities improve the confidence when playing the game.	2.36	Agree	7
The facilities overcome distractions and refine concentration.	2.33	Agree	4.5
The facilities help the athletes to personally discover and cultivate their individual potential.	2.43	Agree	8.5
The facilities help the athletes to enjoy while accomplishing their goals.	2.23	Agree	3
The facilities improve the sense of worth of an athlete.	2.35	Agree	6
The facilities are one of the instruments that help the athlete have sense of competence and achievement.	2.33	Agree	4.5
The facilities appreciate the beauty of each experience in sports.	2.44	Agree	10
The facilities help the athletes feel the sense of fulfillment.	2.43	Agree	8.5
The facilities help the athletes to be motivated.	2.21	Agree	2
The facilities help the athletes improve their skills and performances.	2.12	Agree	1
<b>Overall:</b>	<b>2.32</b>	<b>Agree</b>	

The table shows that, athlete-respondents agree that “facilities help the athletes improve their skills and performances” with a weighted mean of 2.12, “help the athletes to be motivated” with a weighted mean of 2.21, and “help the athletes to enjoy while accomplishing their goals” with a weighted mean of 2.23. These findings run parallel with the study of Adeyeye, et al. (2013), which showed that on the average, the respondent agreed that facilities and equipment affect athlete’s achievement, believing that the availability of facilities and equipment significantly affects athlete’s achievement. These findings imply that most of the athletes agree that the facilities will help them in a positive way. In the level of performance, results reveal that from year 2011 to 2014, only the Badminton team maintains their level of performance having over-all championship in 4 consecutive years with 38 gold medals. Unfortunately, the rest of the events commonly ended, 2<sup>nd</sup> and 3<sup>rd</sup> places.

**Table 3 Performance Level of the Athlete-Respondents from year 2011-2014**

Events (Men & Women)	2011			2012			2013			2014			TOTAL			
	G	S	B	G	S	B	G	S	B	G	S	B	Gold	Silver	Bronze	
Badminton	12	0	0	6	0	0	12	0	0	12	0	0	38	0	0	
Taekwondo	0	13	0	0	6	0	0	13	0	0	1	3	0	45	0	
Basketbal	0	28	0	13	15	0	0	0	15	0	1	5	13	13	58	28
Volleyba	0	30	0	0	15	15	0	15	15	0	0	15	0	60	45	
Karatedo	0	0	0	0	0	0	0	0	0	0	1	7	0	17	0	
Table Tennis	0	0	0	0	12	0	0	0	12	0	1	2	0	24	12	
Arnis	0	0	0	12	0	0	12	0	0	0	0	12	24	0	12	

These findings imply that majority of the teams who participated during the competitions, did not perform consistently for the last 4 years.

According to Ojeme (2000) “having the right quality and quantity sports facilities and equipment is an integral parts of sports development. To a large extent, this is partly what makes the difference between the sports culture of developed and developing nations. In the developed world, sports facilities and equipment of the appropriate standard are available to promote the athletes performance

Table 4 indicates the Relationship between the Status of Sport Facilities and Motivation of the Athletes using Pearson Correlation.

**Table 4 Relationship Between the Status of Sport Facilities and Motivation of the Athletes**

Indicator	Pearson Correlation Coefficient	Remarks	p-value	Remarks
Facilities	0.548	Moderate	0.000	Significant

Given the generated Pearson Correlation Coefficient for the Sport facilities and motivation which is 0.548, it can be inferred that there is a moderate and direct relationship between the two variables. Rejecting the null hypothesis happens if the p-value is less than 0.05 otherwise; the null hypothesis must be accepted. As perceived by the table, having a p-value of 0.000 which is less than 0.05, it can be concluded that there is a significant relationship between the sport facilities and Motivation of the Athletes. This result corresponds to the statement of Chukwu (2001), that “adequate physical infrastructures are necessary for effective sports performance and encouragement. Physical stimuli such as the sports arena or the facilities and equipment themselves can influence the athletes.” According to Jeroh (2012) equipment and facilities are important motivators in sports. When facilities appear to be inadequate or non – existent, participation will not be unlikely but also nonexistent.

It implies that sports training facility such as school gymnasium is very significant because it may affect the motivational level of the athletes.

On the other hand, there is no significant relationship between the sport facilities and the Performance of the athlete from 2011 to 2014. The finding contradicts to (Williams,2006) work, which submitted that athletes' performance is decided by the quality of facilities the athletes have been using for training and he said athletes who are used to quality training as a means of simulating themselves are tend to perform optimally than their counterparts that is not exposed to the same facilities.

## Conclusion

Most of the athlete-respondents agree that the number of the athletes using the Gymnasium during training is over populated and there is a need for improvement and changes on the sports facilities of the university. Moreover, athletes agree that facilities help them improve their skills and performances, to be motivated, and to enjoy while accomplishing their goals. Whereas on the performance level of the athletes, only the Badminton team maintained their level of performance having over-all championship in 4 consecutive years out of 7 team and individual events. The findings of the study support the concept that the status of facility has significant relationship to the motivation of the athletes to perform well. Therefore, it is recommended that the school administration might consider the allocation of sufficient funds or budget for the maintenance and improvement of training facilities and equipment for the athletes.

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## **Multiple Intelligences and Sports Preferences: A Basis for a Proposed Enhanced Physical Education Program**

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### **Abstract**

The study aimed to determine the multiple intelligences, sports preferences, and general average of the student-respondents. Moreover, it intended to know if there is a significant relationship between sports preferences and P.E. academic grade of the students. This research was a correlational study which determines the relationship between variables. This study used a survey technique that included the students-respondents' demographic profile and sports preferences. The sample was drawn from the population using the Slovin's formula. Systematic sampling was utilized to determine the 158 student-respondents. Survey questionnaires were used by the researchers to gather information from the students-respondents that are essential to the progress of the study. Frequency, weighted mean, percentage, and Pearson Correlation were employed as statistical tools in interpreting the gathered data. Findings revealed that majority of the student-respondents were classified under the Musical-rhythmic and Bodily-kinesthetic intelligences. They identified badminton as their most preferred sports activity. In academic performance most of the student-respondents exceed the core requirements in terms of knowledge, skills, understandings, and can transfer them automatically and flexibly through authentic performance which belong to the proficient level. It also showed that there is a significant relationship between the sports preferences and academic performance of the student-respondents.

The researchers recommended that Physical Education Department may consider to come-up with a proposed enhanced Physical Education program based on the data gathered and Department of Education curriculum.

**Keywords:** Multiple Intelligences, Sports Preferences, Academic Performance

### **Introduction**

The Grade School Physical Education (P.E.) Program in St. Paul College Pasig is an integral part of the education program to promote optimum development of every Paulinian. Physical Education offers a unique form of development through movement opportunities. It involves the total child – the moving, feeling and thinking individual. Its unique feature is that it uses the body itself as the subject matter.

It provides opportunities to exercise, do physical activities, participate in team sports, games, dances, and physical fitness regimen. The child is guided to discover that movement is the best outlet of self-expression, communication, and creation as well as means of learning. The student also experiences joys and pains, success and failure, triumph and defeat in these activities. All these are geared towards developing an individual who is physically fit. Physical Education also teaches teamwork, cooperation, sportsmanship, and fair play through various activities. Like what Kolt et al. (2006) mentioned, regular engagement in physical activity and sports enhances the quality of life of young people through greater opportunity for social interaction and improvement of self-esteem.

In the period of early childhood through adolescence, especially, children who are full of energy and have a great need for movement there is a need for a P.E. program (Innocenti, 1999). Simpkins S. et al., (2010) suggest that children tend to maintain the same preferences for sports from childhood through adolescence. In addition, Garyfallos, A., and Asterios P., (2011) found that 10-12 years old children are involved in sports because of entertainment and socialization.

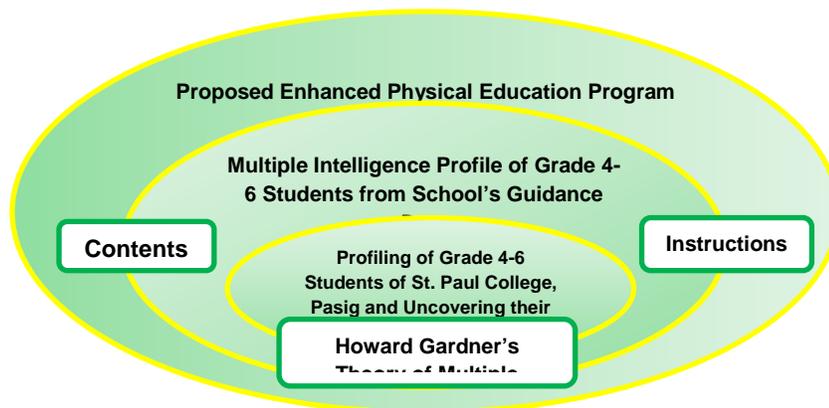
However, it has been observed by the P.E teachers that some of the students are not participating well as they go on a higher level when it comes to the different sports offered by the said program. There appears to have a lack of consistent participation and interest among the students in terms of sports being taught every grading period. The P.E team wondered if the sports being offered were according to the preference of the students or whether it has a connection with the students' multiple intelligence.

Thus, the Physical Education Area conducted this research which used a survey among students from grades 4-6 to determine if there is a significant relationship between multiple intelligences and sports preferences of the students that contribute to a better performance in their P.E classes.

The study aimed to determine the multiple intelligences and sports preferences of Grade 4-6 students of St. Paul College Pasig. Specifically, it sought to know: (1) the multiple intelligences of the student-respondents based on the school Guidance Office; (2) the preferred sports and general average of the student-respondents; and (3) if there is a significant relationship between sports preferences and P.E. academic grade of the student-respondents.

### Conceptual Framework

The researchers came up with the title "Multiple Intelligences and Sports Preferences: Basis for a Proposed Enhanced Physical Education Program" for their aim to improve their lessons and varied instructions based on the relationship of multiple intelligences and sports preferences that will enhance the students' performance in participating in their Physical Education classes.



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FIGURE 1 Figure 1 presents the conceptual paradigm of the study.

The core consists of the Grade 4-6 students' sports preferences and multiple intelligence profile which was derived from the theory of Howard Gardner. The next layer composes of the multiple intelligence results based on the Guidance department's Multiple Intelligence Test, addressing the needs of the students in the said levels. From the data gathered, an Enhanced Physical Education Program will be proposed.

## Methods

This research was a correlational study which determines the relationship between variables. Through correlational study, one can ascertain how much variation is caused by one variable in relation with the variation caused by another variable. This research used a survey technique that included the students-respondents' demographic profile and sports preferences. They also include questions on different suggestions on ways to improve the current athletic program of SPCP. A sampling of students was used to determine the link between multiple intelligence and sports preferences to the academic performance in Physical Education of the grade 4-6 students of SPCP. Grade 4 to 6 students of St. Paul College Pasig constitute the population of the study. The sample was drawn from the population using the Slovin's formula. Sample of the study was 158 students (Grade 4 = 77, Grade 5 = 43 and Grade 6 = 38) with 10 – 11 students per section selected systematically using the systematic sampling. According to Vockell (1983) systematic sampling is a strategy for selecting the sample that allows a system to determine the membership of the samples. The respondents selected were the first 10 to 11 class numbers. The respondents were described according to their demographic profile such as age, family economic status and average grade in Physical Education.

To gather information that is relevant to the study, the researchers used survey questionnaire to come up with the remarkable study. Questionnaires were used by the researchers to gather information from the students-respondents that are essential to the progress of the study. Set of questions were derived from the statements of the problem to seek additional information. The Multiple Intelligence results of respondents that were provided by the Guidance Office were used in this research. Journals, books, scriptures and other materials from different libraries and online sites were also utilized. Survey method was employed for data collection. The researchers made use of written questionnaire to find out the student-respondent's profile and sports preferences. Questionnaires were distributed and retrieved. The records of the Multiple Intelligences form the Guidance Office were also used. The data collected was summarized using the Excel and then the Statistical Package for Social Sciences (SPSS). Frequency, weighted mean, percentage, and Pearson Correlation were used as statistical tools in interpreting the gathered data.

## Results and Discussion

Findings revealed that most of the student-respondents are inclined to the musical rhythmic intelligence with a percentage of 32.91% followed by the bodily kinesthetic intelligence with 17.72 %.

**Table 1; Distribution of Student-respondents According to their Multiple Intelligence**

Multiple Intelligences	Frequency	Percentage
Bodily Kinesthetic	28	17.72
Interpersonal	22	13.92
Intrapersonal	10	6.33
Linguistic Verbal	6	3.80
Logical Mathematical	11	6.96
Musical Rhythmic	52	32.91
Naturalist	12	7.59
Visual / Spatial	17	10.76

It can be inferred from the above data, that most of them are inclined in expressing themselves through music, rhythm, and movements. Musical-rhythmic intelligence is the capability of using the music as a means in perceiving and presenting the music during the emotional transference (Demirel, 1999). While bodily kinesthetic intelligences the ability to use some parts or all over the body to solve a problem, put forward a product and express feelings or emotions (Gardner, 2004). According to the Gürel and Tat (2010) people who have higher bodily intelligence have tendency to succeed in sport, dance, and arts.

**Table 2 Distribution of Student-respondents According to their Sports Preference**

SPORT PREFERENCE	RANKING					
	0	1	2	3	4	5
Badminton	90	<b>31</b>	15	6	7	9
Kickball	97	8	<b>16</b>	16	9	12
Swimming	67	23	15	<b>23</b>	14	15
Basketball	100	5	11	12	<b>20</b>	10
Biking	98	7	11	12	<b>20</b>	10
Bowling	113	4	10	6	10	<b>16</b>

In terms of sports preferences, results in table 2 revealed that their most preferred sport is badminton (rank 1), followed by kickball, swimming, basketball, biking, and bowling. Grice (2008) stresses that playing badminton offers recreational, social, and psychological benefits, aside from tangible awards. It only shows that student-respondents love recreational activities that promote fun and enjoyable experiences.

**Table 3 Distribution of Student-respondents According to their P.E. Grade**

GRADE		FREQUENCY	PERCENTAGE
98 - 100 (A+)	} Advanced	1	0.63
95 - 97.99 (A)		34	21.52
93 - 94.99 (P+)	} Proficient	38	24.05
90 - 92.99 (P)		56	35.44
88 - 89.99 (P-)		19	12.03
86 - 87.99 (AP+)	} Approaching Proficiency	7	4.43
83 - 85.99 (AP)		3	1.90
81 - 82.99 (AP-)		0	0
78 - 80.99 (D+)	} Developing	0	0
75 - 77.99 (D)		0	0
74.99 and below	Beginning	0	0
DROPPED		0	0

Based on the table above, most of the student-respondents belong to the proficient level (P+, P and P-), with 71.52%. The students at this level have developed the fundamental knowledge, skills, core understandings, and can transfer them independently through authentic performance tasks. 22.15 % of the student-respondents belong to the advanced level. The students at this level exceed the core requirements in terms of knowledge, skills, understandings, and can transfer them automatically and flexibly through authentic performance. 6.33 % of the student-respondents belong to the approaching proficiency level. The students at this level have developed the fundamental knowledge, skills, and core

understandings and, with little guidance from the teacher and/or with some assistance from peers, can transfer these understandings through authentic performance tasks.

**Table 4** Relationship between sports preferences and academic performance of the student-respondents

Correlations		SP	GEN. AVERAGE	VERBAL INTERPRETATION
SP	Pearson Correlation	1	.047	SIGNIFICANT
	Sig. (2-tailed)		.559	
	N	158	158	
GEN. AVERAGE	Pearson Correlation	.047	1	
	Sig. (2-tailed)	.559		
	N	158	158	

On the significant relationship, findings revealed that there is a significant relationship between the sports preferences and academic performance of the student-respondents as shown in table 4. It may imply that the higher the interest a student has for a certain sport, the higher grade she can obtain for her Physical Education classes.

**Conclusions**

Majority of the student-respondents were classified under the Musical-rhythmic and Bodily-kinesthetic intelligences. They identified badminton, kickball, swimming as their most preferred sports activity. In academic performance most of the student-respondents exceed the core requirements in terms of knowledge, skills, understandings, and can transfer them automatically and flexibly through authentic performance which belong to the proficient level. There is no significant relationship between multiple intelligence and sports preference of the student-respondents. While on the other hand, there is a significant relationship between the sports preferences and academic performance of the student-respondents. In view of the following conclusions, the researchers recommended that Physical Education Department may consider to come-up with a proposed enhanced Physical Education program based on the data gathered and Department of Education curriculum. Moreover, the school administration should consider financial support to provide necessary equipment to support the acquisition and mastery of skills of the different sports to be learned by the student-respondents.

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## A Training Program For Upper Limb Injuries For Handball Players

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**Abstract:**To Concentrate The Handball Player's Upper Appendage Injuries And Investigate Potential Reasons For Injuries As It Identifies With The Handball Players. This Paper Presumes That More Research Into Handball Player's Upper Appendage Injuries Is Required To Build Up An Intensive Comprehension Of How Injuries Happen. Sorts Of Research Incorporate The Study Of Disease Transmission Considers, Kinematic Swing Examination And Electromyographic Investigations Of The Upper Appendage Amid Handball. By Directing Such Research, Precaution Measures Perhaps Created To Decrease Handball Related Injuries.**Keywords:** *Electromyographic, Handball Players, Upper Limb Injuries.*

### Introduction:

The Handball Players Grumbled Of Extreme Agony In The Correct Upper Appendage. The Correct Upper Appendage, Proximal Piece Of The Correct Arm, And The Privilege Distal Lower Arm Were Swollen And Delicate With A Discernable Crepitus. There Was A 3-Cm Gash Over The Front Part Of The Correct Upper Appendage. Development Of Fingers And Thumb Was Exact. Roentgenograms Exhibited A Dislodged Break At The Proximal Humeral Metaphyseal-Diaphyseal Intersection, (With An Augmentation) Supracondylar Humeral Fracture With A Salter-Harris Sort Ii Physeal Injury Of The Distal Lower Arm. All Injuries Were Found In The Correct Upper Appendage.



Figure 1: Floating upper limb.

Under general anesthesia, debridement of the Gustilo-Anderson sort II open supracondylar break of the humerus was done, and it was bounteously watered with typical saline. Open decrease of the break was finished. Decrease was balanced out utilizing 2 horizontal Kirschner wires. Next, under fluoroscopic control, shut decrease of the proximal humeral fracture was done utilizing a brief Kirschner wire. The Kirschner wire was driven from horizontal to average in the humeral shaft and utilized as a joystick. Lessening was balanced out utilizing 2 Kirschner wires. Finally, shut diminishment of the distal lower arm injuries was done, and the spiral physeal Injury was balanced out utilizing 2 horizontal Kirschner wires.

### **Wrist/Hand injuries**

The wrist is a standout amongst the most widely recognized locales of Injury in handball players. The wrist represents 13–20% of all injuries in beginners and 20–27% of all injuries in professionals in handball players Injury the study of disease transmission thinks about. Amid the handball swing, the wrist is the grapple point between the club and the body. This outcomes in the wrist showing an expansive scope of movement.

Solid strains (especially the flexor carpi ulnaris [FCU]) and ligamentous strains are normal, however factures of the snare of hamate may likewise happen because of this component.

Within the sight of a broken swing style, the learner is likewise powerless to extensor carpi ulnaris (ECU) injuries. Generally, the amateur "throws" the club in the early downswing (the early uncocking of the wrist amid the downswing and a wellspring of lost power and control), which stacks the ECU. Amateurs are regularly overenthusiastic in their practice in an attempt to enhance their diversion. This may bring about tedious stacking, microtrauma and injuries to the ECU. An indication of ECU Injury incorporates ulnar wrist torment with delicacy of the dorsal base of the ulnar styloid where the ECU goes through the 6th dorsal compartment. There is regularly torment on opposed supination and on ulnar deviation in this example.

Extensor carpi ulnaris (ECU) ligament separation over the ulnar dorsal edge of the ulnar head exasperated by intemperate practice has likewise been accounted for. This case was settled by extensor retinaculum discharge and incomplete ulnar head resection after preservationist treatment fizzled. The irregular "hypothenar pound disorder" has likewise been accounted for in a handball player because of the monotonous hitting of practice balls with a "flawed" hold bringing on rehashed weight on the ulnar course hidden the hypothenar distinction. This practice brought about thrombus development in the ulnar supply route.

### **Upper limb injuries**

Upper appendage injuries are basic in handball players, particularly in beginners and especially in females. This is thought to be because of the expanded conveying edge found in the female populace. Upper appendage injuries represent 25–33% of all injuries in beginners and 7–10% of all injuries in professionals. Amusingly, sidelong upper appendage injuries are more typical, at a rate of 5:1 when contrasted with average upper appendage injuries.

### **Shoulder injuries**

Shoulder pain in handball players is a generally normal event contrasted with different locales of the body, representing around 8–18% of all handball injuries. The shoulder experiences a vast ROM amid the handball swing including an extensive level of left shoulder flat adduction and right shoulder outside revolution in the backswing.

An investigation of handball players who experienced shoulder arthroplasty and could come back to handball, found that the correct shoulder was worked on more every now and again (14 out of 26). Nonetheless, this review made no say of the reason for the patients bear torment. The review additionally got some information about their supposition of the patient coming back to handball after arthroplasty. Out of 44 respondents, 91% urged an arrival to play. This overview demonstrated that shoulder arthroplasty does not really disallow an arrival to handball .

## PARTICIPANT

We enlisted all participants between March 2016 and March 2017 and finished all subsequent evaluations by June 2016. The participants were very much coordinated for statistic and clinical attribute

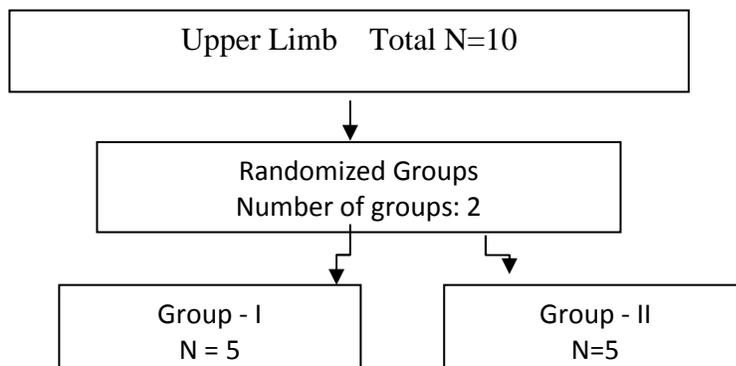


Figure 2: Participants Flow Diagram

## RESULT ANALYSIS:

Table 4.1: Baseline qualities for the keep a watch out, corticosteroid, and physiotherapy bunches practices and the aggregate review populace. Qualities are numbers (rates) unless expressed generally.

Characteristics	Group-I (n=5)	Group- II (n=5)	Total (n=10)
Mean (SD) age (years)	27.3	27.9	27.6
Median (interquartile range) duration (weeks)	26	16	22
Dominant upper limb affected	42	42	133
Previous episodes of lateral upper limb pain	22	14	55
Overuse, usual activities	4	2	8
Overuse, unusual activities	8	18	38
Other (such as sport, unexpected movement)	16	12	39
Mean (SD) pain-free grip force ratio	48.0	42.4 (20.8)	42.9
Mean (SD) assessor rating of severity (/100)	51.9	51.6 (19.3)	53.8
Mean (SD) pain severity in previous week (/100)	61.3	57.5 (25.0)	57.5
Mean (SD) pain free function questionnaire (/100)	76.7	75.4	77.6

- \* Affected side/unaffected side x100.

## PRIMARY END POINTS

Participants' characteristics, (for example, sex and term of indications) and result measures taken at benchmark did not essentially impact the dichotomous and nonstop measures after some time; we hence show unadjusted information. Critical time by gathering connections for all result measures happened in the omnibus examination.

Table 4.2 demonstrates the result information, and table 4.3 demonstrates the total occasion rates, relative hazard diminishments, and numbers expected to treat.

We discovered noteworthy contrasts for all essential result measures at a month and a half that favored infusion over keep a watch out; 51/65 (78%) participants revealed accomplishment with infusions contrasted and 16/60 (27%) with sit back and watch (relative hazard decrease 0.7, 99% certainty interim 0.4 to 0.9), speaking to a number expected to treat of 2. Infusion was likewise better than physiotherapy on all result measures aside from worldwide change (0.4, -0.2 to 0.9); 41/63 (65%) participants detailed accomplishment at a month and a half with physiotherapy (fig 4.2, table 4.3). At 52 weeks' development, the infusion bunch participants were essentially more awful on all results contrasted and the physiotherapy gather (0.3, 0.1 to 0.5; number expected to treat = 4) and on two out of three measures contrasted and sit back and watch (0.3, 0.04 to 0.4; 4).

**Table 4.2:** Mean (SD) scores and area under the curve (AUC) for continuous outcome measures and mean difference (99% confidence intervals) between groups at 3, 6, 12, 26, and 52 weeks

DURATION	Group – I (n=5)	Group – II (n=5)
3 weeks	46.2 (22.1)	54.5 (24.4)
6 weeks	51.8 (23.0)	70.2 (25.4)
12 weeks	72.1 (23.0)	80.8 (22.6)
26 weeks	86.5 (20.2)	96.3 (29.9)
52 weeks	96.5 (18.5)	100.9 (30.9)
AUC	1743 (960)	2278 (1269)
3 weeks	52.9 (17.9)	42.2 (19.2)
6 weeks	44.1 (16.7)	28.1 (19.9)
12 weeks	27.4 (16.5)	17.8 (16.8)
26 weeks	17.0 (14.3)	8.3 (11.7)
52 weeks	10.3 (13.2)	5.1 (9.6)
AUC	1179 (500)	732 (544)
Global improvement (success): AUC	36.4 (12.4)	41.6 (12.8)
3 weeks	61.3 (25.3)	46.8 (26.7)
6 weeks	51.0 (26.5)	33.8 (28.2)
12 weeks	30.4 (29.4)	18.5 (21.3)
26 weeks	19.8 (24.0)	14.0 (22.1)
52 weeks	13.9 (22.6)	6.6 (14.6)
Pain free function questionnaire (/100):		
3 weeks	71.3 (25.2)	63.9 (21.0)
6 weeks	63.8 (25.4)	46.8 (29.7)
12 weeks	53.6 (31.2)	34.9 (27.5)
26 weeks	32.8 (30.2)	26.5 (28.1)
52 weeks	24.6 (29.6)	12.9 (29.9)

- \* Positive score favours reference group (that is, first group listed in comparison).

Group – I, II performed altogether superior to anything sit back and watch at a month and a half for all result measures (for instance, achievement: 0.6, 0.2 to 0.9; number expected to treat = 3). Notwithstanding, by 52 weeks no distinction existed on any essential result measure, as most participants had either abundantly enhanced or totally recuperated (sit back and watch 56/62; physiotherapy 59/63).

**Benefits**

Area under the bend investigation uncovered a huge preferred standpoint for physiotherapy over infusion for all essential result measures, over sit back and watch for torment free grasp (mean contrast = 534, 99% certainty interim 3 to 1065) and assessor seriousness (447, 137 to 758), and additionally for keep a watch out over infusion for worldwide change (-8.3, -15.0 to -1.5) and assessor seriousness (-337, -642 to -32) (table 4.2, fig 4.2).

**Recurrences**

The corticosteroid infusion bunch had most detailed repeats; 47/65 (72%) participants crumbled following three or a month and a half. Repeats after infusion were fundamentally more noteworthy than repeats after physiotherapy (5/66, 8%; relative hazard lessening 0.9, 0.6 to 1.1) or keep a watch out (6/67, 9%; 0.9, 0.6 to 1.1), which were not essentially not quite the same as each other (relative hazard diminishment 0.2, -1.4 to 1.7).

**Protocol Treatment**

Wait and watch out participants (34/62, 55%) looked for fundamentally more not per convention treatment than physiotherapy participants (13/63, 21%; relative hazard lessening 0.6, 0.2 to 1.0), however close to corticosteroid infusion participants (32/65, 49%; 0.1, -0.3 to 0.5) (table 4.4). Infusion participants looked for altogether more not per convention treatment than physiotherapy participants (relative hazard lessening 0.6, 0.1 to 1.0).

**Table 4.4:** Additional not per protocol treatments

<b>Additional treatment</b>	<b>Yogic (n=10)</b>	<b>Mechine(n=10)</b>
None	28	50
GP/specialist	2	1
yesPhysiotherapy	3	1
Corticosteroid injection	1	0
Upper limb support/brace	11	2
Analgesic or NSAID	22	9
Acupuncture	2	2
Complementary medicine	13	3

- GP=general practitioner; NSAID=non-steroidal anti-inflammatory drug.
- \* Some participants had more than one type of additional treatment.

**Success of Blinding**

At 52 weeks, the blinded assessor effectively speculated the distributed treatment in 101/198 (51%) cases, on the premise of the course of upper appendage protests and four participants who coincidentally uncovered their gathering portion. The assessor speculated accurately for 39/67 (58%) participants in the keep a watch out gathering, 27/65 (42%) in the infusion bunch, and 35/66 (53%) in the physiotherapy assemble. As this extent was more prominent than anticipated by possibility, we did a post hoc subgroup examination to survey the effect of the loss of blinding on result measures. We recognized no noteworthy contrast in results between the participants whose treatment assignment the assessor speculated effectively and those for whom the assessor stayed blinded.

## Symptoms

A sum of 10 participants encountered an unfriendly occasion from medicines. A large portion of these were gentle, and torment after treatment was the most regularly announced reaction (5 infusion; 5 physiotherapy). Just a single member in each gathering revealed torment enduring seven days or more. Two participants revealed loss of skin shade, and one additionally had decay of subcutaneous tissue in the wake of getting the corticosteroid infusion.

## Conclusion

The handball swing is a mind boggling body development including a vast ROM of the upper appendage that goes about as a connection between the golf club and the body. injuries to the upper appendage represent the larger part of handball-related injuries. Numerous injuries happen as the club impacts the ball and are muscle-related. A comprehension of how the body moves and the muscle action accomplished amid the handball sport assists the wellbeing expert with understanding why these injuries happen. Additionally ponder into the diverse sorts of handball game and the distinctive aptitude levels of handball players is required to completely comprehend the upper appendage work in the handball game. Such understanding may empower the advancement of administration and avoidance projects to decrease the upper appendage injuries brought on by handball.

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## Relation Of Some Orthopedic Measurements With Common Handball Injuries

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### **Abstract:**

As a major aspect of every day clinical practice, healthcare professionals generally utilize result measures regularly as polls to evaluate the effect of sickness on patients. There is awesome weight on healing center trusts to evaluate their execution both regarding clinical result and cost adequacy. Gathering of information for review and research is a fundamental piece of this. Result polls incredibly facilitate this undertaking by giving basic organizations to information accumulation and examinations. There are a few distinct instruments accessible for clinicians and this can be convoluted by the presence of various measures for various claims to fame. In orthopedics, for instance, particular measures exist for various locales of the body. The creators of a considerable lot of these have posted the surveys on the web for straightforward entry and utilize. This article surveys some basic orthopedic scores that have web based access.

### **Introduction:**

Handball is a game amid which physical contact happens consistently. The blend of the above components implies that intense knee and lower leg injuries happen routinely. And also these injuries to the legs, injuries to the wrist, thumb, elbow and shoulder do happen.

### **Results**

A sum of 10 ambulatory patients were alluded for orthopedic surgery for regular injuries amid the 4-month time frame. Of 10 qualified patients, 10 (93%) consented to finish all polls. Mean age of the specimen was 28 years (SD 19 years, run 18 to 88 years) and marginally the greater part were female (n = 5, 51%). Most (n = 5, 90%) pronounced that they were in great to brilliant wellbeing before their injuries. All things considered, members had 14 years of tutoring (SD 4.5, territory 2 to 37).

### **Demographics**

Amid the time of study, there were 20 announced injuries. Of these, 53 (49.9%) happened amid amusements. The frequency of injuries was 19.1 for every 20 competitor exposures. The players found the middle value of 26.8 years old. There were no relationships between's injuries rate and stature, weight, or years of HYDERABAD experience (Figure 1).

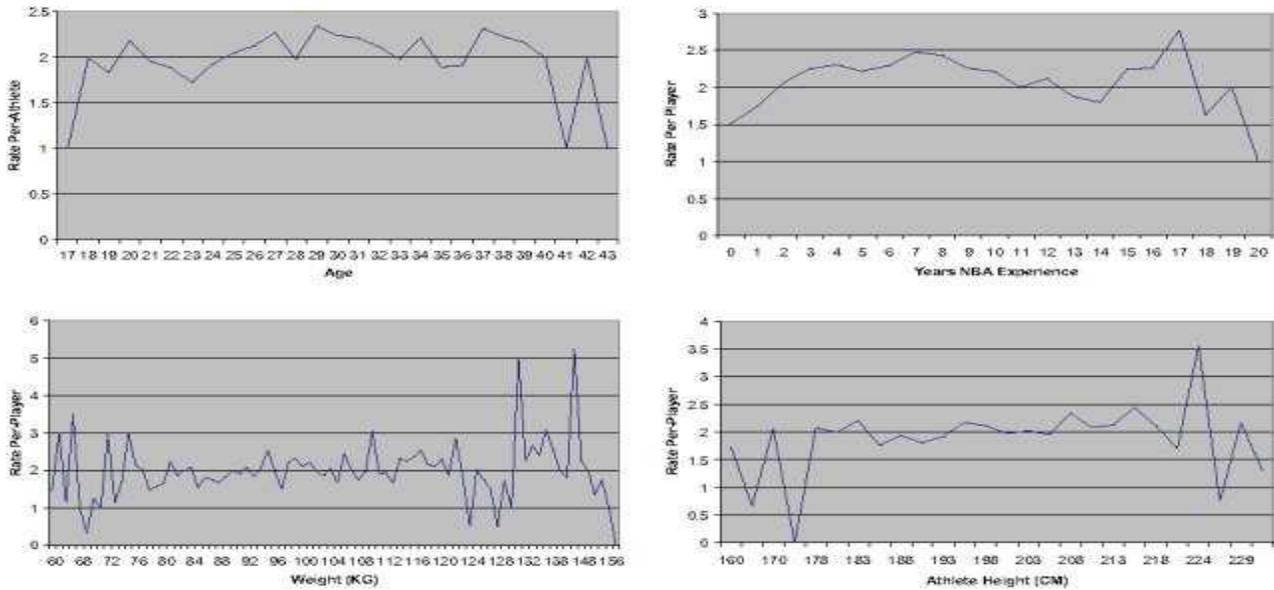


Figure 1: Injury rate by player demographics.

### INJURY PREVALENCE

Amusement related injuries and 57.8% of all amusement related injuries (Table 1). These injuries likewise were in charge of 72.3% of the diversions that were missed due to injuries. The rate of injuries per 1000 competitor exposures was measurably higher than some other body region, at 11.1. The following most-basic zones of injuries included the furthest point and middle, which represented 12.2% and 12.9% of all injuries, individually.

Table 1: Injury rate by body area.

Body Area	All Injuries (n, 10)				Game-Related Injuries (n, 10)		Game-Related Injuries (n, 10)		Rate	95% CI <sup>a</sup>
	Total	Games Missed		Total	Game Related					
	n	%	n	%	n	%	n	%		
Lower extremity	1	62.4	1	72.3	1	57.8	1	46.3	11.1	10.7-11.4
Upper extremity	1	15.4	1	12.2	1	19.3	1	62.4	3.7	3.5-3.9
Head	1	7.6	1	1.5	1	10.5	1	69.2	2.0	1.8-2.2
Cervical spine	1	1.6	1	1.0	1	1.8	1	58.6	0.4	0.3-0.4
Systemic	1	0.3	1	0.1	1	0.1	1	18.4	0.0	0.0-0.0
Total	5	100.0	5	100.0	5	100.0	5	49.9	19.1	18.7-19.6

<sup>a</sup>CI, confidence interval.

The lower leg was by a long shot the most well-known joint injuries, containing 20 injuries and 14.7% of all injuries (Table 2). There were 123 amusement related lower leg injuries (17.9%) with a frequency of 3.4 injuries for every 1000 competitor exposures. Lumbar spine injuries (n, 179; 10.2%) were in charge of nearly the same number of amusements missed (n, 129) as the lower leg injuries (n, 138). injuries to the patella (n, 166; 10.1%) and the knee (n, 135; 9.0%) brought about more diversions missed (n, 8076 and 10 737, individually) than both of the 2 most regularly injuries territories (lower leg and lumbar spine).

Table 2: Injury rate by structure.

	All Injuries (n, 100)				Game-Related Injuries (n, 67)				
	Total		Games Missed		Total		Game Related		
Structure	n	%	n	%	n	%	%	Rate	95% CI <sup>a</sup>
Ankle	2	14.7	04	11.6	1	17.9	60.7	3.4	3.2-3.6
Knee	1	9.0	02	18.1	2	8.0	44.1	1.5	1.4-1.7
Hand	1	4.5	10	4.6	1	6.1	67.1	1.2	1.0-1.3
Shoulder	2	3.7	07	3.3	2	4.2	56.9	0.8	0.7-0.9
Fingers	1	2.4	10	1.2	2	3.1	65.4	0.6	0.5-0.7
Elbow	2	2.0	04	0.7	2	2.4	59.6	0.5	0.4-0.5
Cervical spine	1	1.6	04	1.0	2	1.8	58.6	0.4	0.3-0.4
Abdomen	2	0.6	05	0.8	1	0.6	50.0	0.1	0.1-0.2
Systemic	3	0.3	02	0.1	2	0.1	18.4	0.0	0.0-0.0

CI, confidence interval.

At the point when the pathology was investigated, horizontal lower leg sprains were discovered most normal (13.2%), representing 8.8% of all diversions missed (Table 3). They additionally represented 17.0% of the injuries maintained amid recreations. The occurrence of lower leg sprain (3.2 for every 1000 competitor exposures) was more than twice as normal as some other injuries. Patellofemoral disorder spoke to 11.9% of all reports yet just 3.9% of injuries supported amid diversions. Patellofemoral injuries were the most well-known explanation behind diversions missed (n, 10 370; 17.5% of all causes).

**Table 3: Injury rate by specific pathology.**

	All Injuries				Game-Related Injuries				
	Total		Games Missed		Total		Game Related		
Pathology	n	%	n	%	n	%	%	Rate	95% CI <sup>b</sup>
Lateral ankle sprain	1	13.2	1	8.8	1	17.0	64.3	3.2	3.0-3.4
Lumbar sprain/strain	1	7.9	1	6.6	1	5.7	36.1	1.1	1.0-1.2
Hamstring strain	1	3.3	1	3.1	1	3.0	45.8	0.6	0.5-0.7
Knee sprain	1	3.1	1	7.4	1	4.3	68.4	0.8	0.7-0.9
Foot sprain	1	1.6	1	1.5	1	1.9	58.0	0.4	0.3-0.4
Total	100	87.4							

At long last, examination of injuries sort uncovered that sprains were the most widely recognized (27.8%), trailed by fiery conditions (21.8%) and strains or fit (21.8%) (Table 4).

**Table 4: Injury rate by type.**

Classification	All Injuries (n, 53)				Game-Related Injuries (n, 47)				95% CI
	Total		Games Missed		Total		Game Related		
	n	%	n	%	n	%	%	Rate	
Sprain	2	27.8	1	25.4	2	35.5	63.7	6.8	6.5-7.0
Inflammatory	1	21.8	2	28.5	1	8.8	20.1	1.7	1.5-1.8
Strain/spasm	1	21.8	2	19.4	1	19.5	44.7	3.7	3.5-3.9
Contusion	1	15.3	1	4.6	2	21.3	69.7	4.1	3.8-4.3
Skin injuries	3	4.2	02	0.4	03	5.7	67.3	1.1	1.0-1.2
Fractures	1	4.1	03	11.5	03	4.7	57.1	0.9	0.8-1.0
Neurological	2	2.0	03	5.6	02	1.7	42.0	0.3	0.3-0.4
Systemic	1	1.3	01	0.2	02	1.1	43.9	0.2	0.2-0.3
Eye injuries	2	0.8	01	0.3	02	1.0	62.7	0.2	0.1-0.2
Meniscal tear	2	0.8	02	4.1	01	0.6	39.2	0.1	0.1-0.2
Heat injuries	3	0.2	02	0.0	01	0.1	26.1	0.0	0.0-0.0

CI, confidence interval.

**DISCUSSION:**

The finding that horizontal lower leg sprains were the most well-known injuries (13.2%) is not amazing in light of the recurrence of hopping and arriving in a horde of players. Much consideration has concentrated on avoidance of lower leg reversal injuries in ball players. Players by and large wear mid-or high-best shoes intended to secure the lower leg, and numerous players tape their lower legs or wear props. The high recurrence of lower leg injuries recommends that more clinical and biomechanical research is important to enhance defensive shoe and lower leg hardware.

**CONCLUSION:**

To depict referral instruments for referral to orthopedic estimation for separated appendage injuries in a general human services framework and to recognize components influencing access. We directed an imminent investigation of 10 successive grown-ups (mean age 28 years) alluded to orthopedic surgery for detached appendage injuries amid a 4-month time frame. Self-announced information on the way of the injury, the slipped by time amongst injuries and orthopedic interview, the number and kind of past essential care conferences, sociodemographic attributes, and the level of fulfillment with care. Normal time between the injuries and orthopedic meeting was 89 hours, with a normal of 68 hours (run 0 to 642) for deferral between essential care interview and orthopedic conference. A sum of 36% of patients with time-touchy judgments had unsuitable postponements to orthopedic counsel as per the Orthopedic Association rules. Bring down appendage injuries, counseling first at another healing center, living a long way from the injury focus, quiet impression of low seriousness, and having a delicate tissue injuries were related with longer deferrals.

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## Effect of Aquarobic Dance on Lipid Profile in women with obesity

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### Background:

The condition of the development of coronary heart disease to the top rank cause of death in the population of developing countries including in Indonesia over the age of 40 years, based on research results associated with higher total cholesterol and LDL cholesterol aquarobic dance training with low to moderate intensity intensity (Intermediate) 60- 85% of maximum HR, exercise duration 45-60 minutes with the frequency of exercise 3-5 times per week for 12 weeks granted in hopes of influencing lipid profile. This study aimed to determine the effect of aquarobic dance on the lipid profile (total blood cholesterol levels, blood LDL cholesterol levels, blood HDL cholesterol levels, and blood triglyceride levels). **Method:** This study experimental research, design using pre-test and post-test with the provision of treatment aquarobic dance workout, with low intensity to medium intensity 60-85% of maximum HR, exercise duration 45-60 minutes with the frequency of exercise 3-5 times per week for 12 weeks. The samples in this study were obese woman in the city of Semarang in Central Java province at the age of 40-55 years. **Result:** The results showed that low-intensity aquarobic dance to moderate intensity (Intermediate) 60-85% HR Max, duration 45-60 minutes with the frequency of exercise 3-5 times per week for 12 weeks can reduce total blood cholesterol levels, improving blood HDL cholesterol, lowering blood LDL cholesterol and to lower blood triglycerides. Statistically proven the existence of a significant effect of low-intensity dance aquarobic to moderate intensity 60-85% of maximal HR exercise duration 45-60 minutes with the frequency of exercise 3-5 times per week for 12 weeks on the lipid profile (total cholesterol, HDL cholesterol, LDL cholesterol and triglycerides) which indicated the probability value ( $p < 0.05$ ). **Conclusion:** the provision of dance aquarobic with low to moderate intensity intensity (Intermediate) 60-85% of maximal HR exercise duration 45-60 minutes with the frequency of exercise 3-5 times per week for 12 weeks, can lower total cholesterol, LDL cholesterol and triglyceride levels, and can increase HDL cholesterol levels.

**Keywords:** aquarobic dance, obesity, kolesterol total, kolesterol LDL, Kolesterol HDL, Triglicerida.

### Introduction

Progress and improvement of the welfare and social status changes, unwittingly change a person's lifestyle, including daily patterns that tend to prefer foods rich in fat and meat than plant foods rich in fiber. The impact of these changes resulted in increased levels of cholesterol and decreased levels of HDL in the blood of a person, known as dyslipidemia. Cardiovascular disease (CVD) is one cause of death in the population of developing countries, including Indonesia. (Petersen & Pedersen 2005; Fernandez 2007) Indonesia's National Household Health Survey in 1972 showed PKV ranks-11, 1986 ranks 3rd, and Household Health Survey 1992 is the first cause of death for those above 40 years. (Wijayanti 2013) The proportion of patients with cardiovascular disease are hospitalized from the years 1990 to 1995 increased from 2.1% to 3.8%. One of cardiovascular disease is coronary heart disease (CHD). CHD is closely related to atherosclerosis, because 99% of the main cause is atherosclerosis. (Ali 2005) Epidemiological studies, and clinical laboratories that show an association between high total cholesterol and LDL (Low Density Lipoprotein) with the occurrence of cardiovascular disease.

The cause of abnormal blood vessels that lead to the heart of CHD is dyslipidemia or elevated blood triglyceride levels and decreased levels of high density lipoprotein (HDL) blood. Dyslipidemia is one risk factor for CHD. To avoid or reduce these risk factors is recommended to control blood lipid levels in order to always be in normal circumstances. The fat contained in the body and the food is cholesterol, triglycerides, phospholipids, and free fatty acids, when the levels of fat in the body so high then this condition can lead to calcification of blood vessels.(Saad & Gooren 2011)

Previous study reported related to the physical exercise program for the management of blood cholesterol shows the results still vary. In addition, there are researchers who noted that the program of physical exercise has not fully provide meaningful contributions to efforts to manage dyslipidemia, even a dose of physical exercise a certain weight can actually degrade the quality of blood vessels due to the possibility of exposure to oxidants are quite high. (Pialoux et al. 2006)One factors that affect the result of physical exercise is exercise that includes dose intensity, frequency and duration of exercise. Unknown, studies relating to the method using the exercise intensity, frequency and duration of attention, manpower and enough time, can sometimes be an obstacle for some people.

Aquarobic dance is a form of physical activity that is rhythmic process is conducted continuously by combining some movement that aims to strengthen the heart, circulatory, muscle and burn fat so that the body requires more oxygen and pulse rate increased, done in the water. The term is often said to be the aquarobic dance workouts that aim to achieve freshness cardiorespiratory or aerobic fitness, which is indicated by the ability of the body's physiological work to produce the efficiency of the blood vessels, heart and lungs in a long time period. (Mukarromah et al. 2013; Mukarromah 2014; Colado et al. 2012; Katsura et al. 2010)The freshness cardiorespiratory also shown the ability respiratory and circulatory system to provide oxygen to the working muscles during rhythmic and continuous activity involving large muscle groups.(Kristiansen et al. 2008)Physiologically aquarobic dance performed regularly and measurable aims to improve the system and organ function in order to produce a better performance. It is also associated with a person's ability to use oxygen sufficient to meet the oxygen requirements at the time of exercise. At the time of the dance aquarobic oxygen system is pre-dominant energy source. (McConell et al. 1999)This exercise is stimulate the heart, blood vessels and lungs. The heart pumps blood more powerful, more and overall blood volume increases. In the implementation of aerobic gymnastic exercise should be guided by the dosage adjusted with the purpose of the exercise. Dosage is always associated with the intensity of exercise, repetition, frequency, and duration of exercise. Exercise intensity is defined as the amount of load that must be done during exercise with an indicator of increased pulse every minute or so-called heart rate (HR). (O'Donovan et al. 2005)

Intensity, repetition, frequency and duration of exercise are interrelated and influence, when a high intensity (85% HR maximum), duration of exercise 12-30 minutes. Conversely when low-intensity exercise should be a long time (30-60 minutes). To increase the durability of sufficient aerobic exercise for 30-60 minutes continuously. (Huang et al. 2013; Donnelly et al. 2009). The other research reported that aerobic exercise performed for 8-12 weeks continuously gave significant effects for physiological changes in the body. There are several forms of dance aquarobic movement, such as low Impact, mix impact, interval, step and slide, which gives a lot of advantages, which provides the benefits of health and fitness and help relieve stress.(Stults-Kolehmainen & Sinha 2014)

## **Materials and Methods**

### *Participants*

Twenty-four obese women aged of  $46.49 \pm 1.41$  years (Weight  $76.41 \pm 3.11$  kg, Height  $155.4 \pm 1.5$  cm, body mass index (BMI)  $32.8 \pm 0.92$ ) voluntarily participated in this study in Semarang, a cut-off for obesity BMI  $\geq 30$  kg/m<sup>2</sup>, based on Asia-Pacific guidelines. (Tudor-Locke et al. 2004; Nuurad et al. 2003) Lipid profile serum, heart rate monitors and blood pressure were determined in order to exclude the patients with metabolic disease. Postmenopausal women were screened with regards to the mean age of natural menopause in Central Java Province Indonesia. In addition, the participants filled out questionnaires containing fields such as age, last menstrual day, menopausal status (e.g., last menstrual period occurred 6 months). All participants were informed the possible risk and the testing procedure of the trial before they signed the informed consent document. Participants were informed not to perform vigorous exercise one week before and during the trial. The study was approved by the by the Ethical and Research Committee of the Kariadi Hospitals (RSDK Semarang, Indonesia) before recruitment of the participants.

**Experimental Design:**The purpose of the study to investigate the effect of 12 weeks aquarobics dance program on lipid profile in women with obesity. Participants were randomly divided into two groups including control and aquarobic dance groups. Before and after the exercise training, anthropometric measurements were examined for all subjects. Height and body weight were recorded and body mass index (BMI) was calculated from the ratio of weight (kg)/height (m<sup>2</sup>). Body fat (%) was measured and blood pressure was measured on the right arm with the subjects in a sitting position, twice, after a 10 min rest, using a standard mercury sphygmomanometer. Lipid profile plasma were measured before and 1 hours after the aquarobic dance treatment, as well as immediately after exercise challenge.

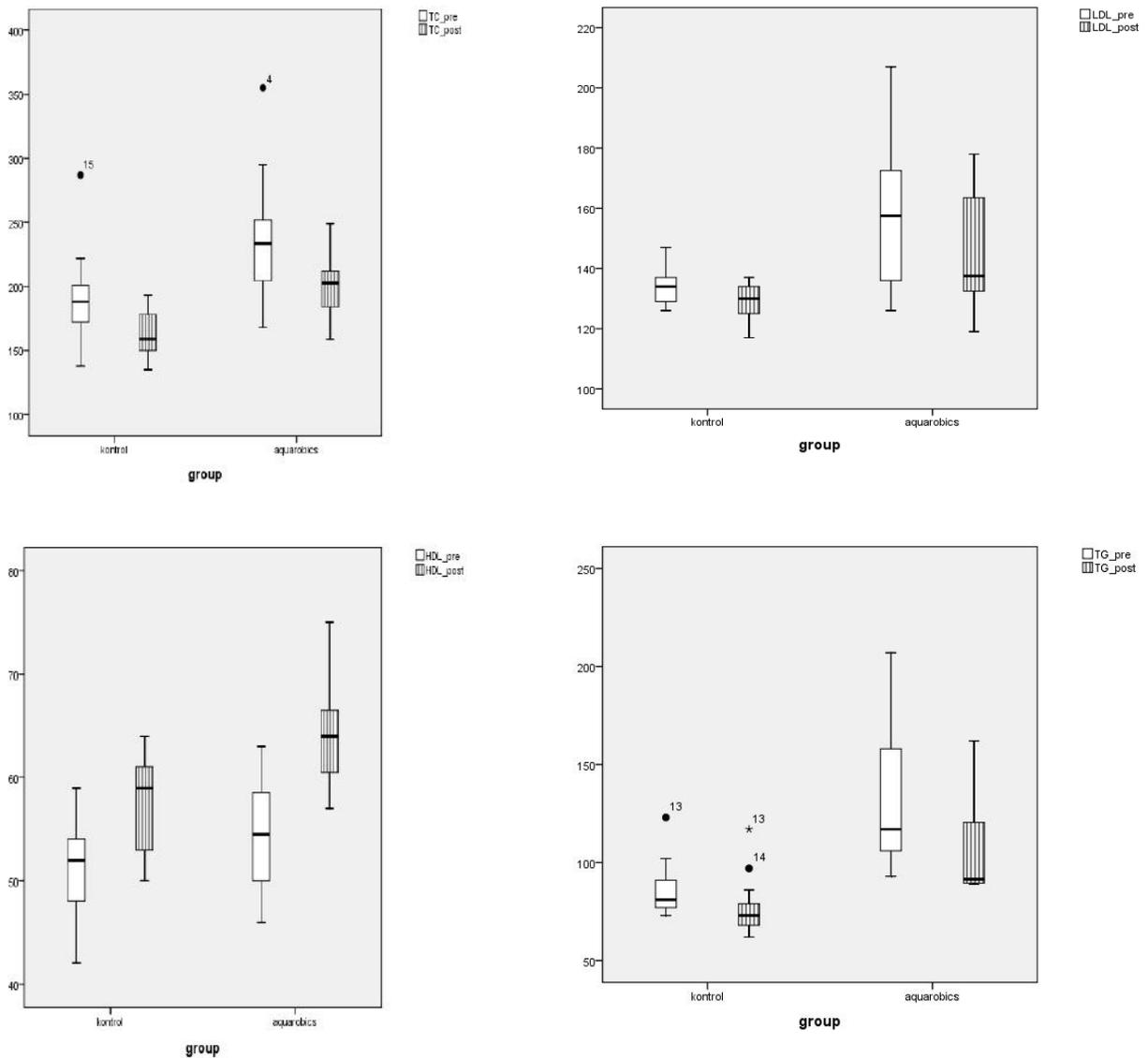
**Aquarobic Dance:**Before aquarobic dance each subject's maximal oxygen consumption (VO<sub>2</sub> max) was measured to establish their exercise training intensity. The subjects were then not familiarized with aquarobics exercises, after which they were told the requirements for the present experiment and their VO<sub>2</sub> max was determined following the Bruce Protocol. Metabolic data were collected using open circuit spirometry (Sensor Medics VO<sub>2</sub>max, USA). Aquarobics dance(Mukarromah et al. 2013; Georgia K 1980)supervised by experienced aquarobics instructors, was performed three days a week for 8 weeks. Each session consisted of a 10 min warm up session, a 40 min session of aquarobics exercises an intensity of 50-75% of the predetermined. The exercise intensity was controlled using a belt heart rate sensor (polar beat), and at the end of each session, there was a cool-down period consisting of stretching for 10 min.

**Biochemical measurement:**Blood samples for lipid profile (TG, total cholesterol, LDL and HDL) measurement were drawn into pre cooled glass tubes containing EDTA. The tubes were spun immediately at 2200 g for 15 min at 4°C. The plasma was stored at -80°C until analyses were performed. Blood lipid profile that meant in this study are lipid levels in the blood of respondents were taken intravenously contained in the form of total cholesterol, HDL cholesterol, LDL-C and triglyceride blood serum were examined as laboratory tests with the method of automatic analyzer (resistancy electronic / impedancy and volumetric metering), controlled by the simple method CHOD-PAP (computerized). Determination of cholesterol in the blood, we use the principle of cholesterol was determined after enzymatic hydrolysis and oxidation. Quinoneimin indicator formed from hydrogen peroxide and 4 - amino antipyrin in the presence of phenol and peroxide. On examination of HDL cholesterol, previously, the supernatant was first created, the samples of 200 mL added with 200 mL reagent HDL. The reagent will precipitate particles - other than HDL lipoprotein particle. After incubation and dicentrifuge, the supernatant was ready to be used in the examination of HDL. The principle of this experiment is the chylomicrons, VDL (Very Low Density Lipoprotein) and LDL (Low Density Lipoprotein) is precipitated from the sum phosphotugistic acid and magnesium chloride. After the supernatant was centrifuged, the liquid consists of little HDL cholesterol while HDL is determined from the process enzimatis.Kadar obtained by our group was 540.912 mg / dl. These levels are classified in a high state. HDL woman is <50 mg / dl, male - male <40 mg / dL and high HDL levels> 60 mg / dl. (KANNAN1 et al. 2014)Examination LDL cholesterol levels obtained at 140, 635 mg / dl. In the examination of this figure LDL levels fall into the category of high LDL as> 130 mg / dl. Optimal ie 100 mg / dl, the optimal approach is 100-129 mg / dl, the highest normal limit of 130-159 mg / dl, as high as 160-189 mg / dl

**Statistical analysis:** Statistical analysis of the data was performed for each group using the means and standard deviations. Then, the Kolmogorov-Smirnov test was used to ensure that the data were normally distributed. All data shown represent the means±the standard deviation (SD). Differences in various parameters before and after aquarobics exercises were performed using the paired t-test. To demonstrate the aquarobics exercises-induced changes in adiponectin levels, we adjusted for the change in body weight. Changes in body weight were determined by calculating the difference in the body weights before and after aquarobics exercises. Differences between weight loss and weight gain were performed using independent the t-test, one-way analysis of variance (ANOVA) was performed.(HSCIC 2014; Harriss & Atkinson 2009)To eliminate the possible influence of the baseline characteristics on the effects of exercise, adjustments for age, weight, BMI, body fat (%). All statistical analyses were performed using SPSS-PC for Windows (version 20.0, SPSS Inc., Chicago, IL, USA); p<0.05 was considered statistically significant.**Results:**Data were successfully summarized through procedures for gathering research data, including age, menopausal status, activities other than aquarobic dance. Blood lipids that consisting of total cholesterol, HDL, LDL and TG), then processed with descriptive statistics followed by a 't' test (t-test) between the time (short formula), while the results obtained as a series of tables and the following explanation:

Table 1. Physical, physiological and biochemistry variables in two group

Variabel	Aquarobic Dance	Control	p
	n=12	n=12	
	Mean ± SD	Mean ± SD	
Age (th)	46.74±1.30	46.79±1.35	0.225 <sup>(1)</sup>
Intake energi (kcal)	2125± 165.81	2134± 136.11	0.112 <sup>(1)</sup>
Intake protein (g)	44.91±1.63	45.38±1.78	0.608 <sup>(1)</sup>
Intakefat (g)	63.93±3.12	65.66±3.34	0.265 <sup>(1)</sup>
Height (m)	1.55 ± 0.05	1.52 ± 0.04	0.151 <sup>(1)</sup>
Weight (kg) <i>pre</i>	75.66±5.54	75.41 ±6.61	0.539 <sup>(1)</sup>
Weight (kg) <i>post</i>	73.16±4.60	75.41 ± 6.61	0.370 <sup>(1)</sup>
Total Cholesterol (mg/dL) <i>pre</i>	216.33±40.95	192.25 ±37.42	0.044 <sup>(1)</sup>
Total Cholesterol (mg/dL) <i>post</i>	190.75±35.43	164.00 ± 17.89	0.008 <sup>(1)</sup>
LDL(mg/dL) <i>pre</i>	137.75±17.82	134.00 ± 6.12	0.024 <sup>(1)</sup>
LDL (mg/dL) <i>post</i>	123.92±14.38	128.58 ± 5.76	0.012 <sup>(1)</sup>
HDL(mg/dL) <i>pre</i>	57.17±5,50	50.50 ±4.75	0.013 <sup>(1)</sup>
HDL(mg/dL) <i>post</i>	61.83±4.85	57.00 ± 4.55	0.003 <sup>(1)</sup>
TG(mg/dL) <i>pre</i>	119.17±35.14	82.75 ± 9.42	0.009 <sup>(1)</sup>
TG(mg/dL) <i>post</i>	99.33±29.95	73.92 ± 10.11	0.002 <sup>(1)</sup>



Picture 1. Lipid profile after Aquarobic dance

The mean of age of subject in the study, height, body weight before and after treatment in all groups was not statistically significant. Nutrient consumption rate calculation based on the nutritional needs according to Regulation 75 Year 2013 concerning the recommended RDA for Indonesia which is adjusted to the level of age and sex is the energy requirement for women aged 30-49 years is 2625kcal, protein 65g, 73g fat and energy requirements for women aged 50-64 is 2325kcal, 65g protein and 65g of fat. In this study, measurement of food intake using a 24-hour food recall, based on the calculation software nutrisoft note that the level of energy consumption, protein and fat in each groups was not significant ( $p > 0.05$ ;  $p > 0.05$ ;  $p > 0.05$ ).

The results showed that in all groups of food intake during the treatment is the same, so this result is not affected by food intake. Aquarobic dance has an effect on blood lipid profile, especially in the HDL and LDL cholesterol fractions. In this study, the mean levels of total cholesterol, LDL and TG decreased after aquarobic dance and HDL cholesterol levels increased. Exercise performed is aquarobic dance with intensity 75%-80% HR Max, frequency of exercise three times/week for 12 weeks, with an additional active rest for 5 minutes after exercise. Pre dominant energy system used in this exercise is the energy system aerobic.

Total cholesterol before aquarobic dance is  $216.33 \pm 40.95$  higher than the total cholesterol level after aquarobic dance  $190.75 \pm 35.43$ . Statistical test results obtained by value  $t = 5.333$ ,  $p > 0.05$ . This is consistent with the results of a research report that after exercise of moderate intensity (60%-80% HR Max) of total cholesterol decreased 4% after exercise and then increase 5-8% after 48 hours. Aquarobic dance according to the dose the proper training can help protect the cardiovascular system in many ways, it can help decrease in total cholesterol kolesterol. As a result of a decreased in the consumption of high-fat foods that are high in cholesterol, causing a decrease in dietary cholesterol absorption from the digestive system, the levels of cholesterol in the blood is also decreased.

LDL cholesterol levels before aquarobic dance is  $137.75 \pm 17.82$  higher than the levels of LDL-C after aquarobic dance  $123.92 \pm 14.38$ . Statistical test results obtained by value  $t = 6.456$   $p > 0.05$ . This is consistent with the results of a research report that after exercise of moderate intensity (75%-80% HRmax) in LDL cholesterol decreased 4% after exercise and then increase 5-8% after 48 jam. decrease in LDL cholesterol levels is likely due to of the decline in total cholesterol by 9.67%, given the LDL cholesterol is low-density lipoprotein cholesterol and cholesterol ester in high concentrations, therefore, when the total cholesterol level in the blood serum levels of LDL cholesterol low, the serum also lower. it this is consistent with previous research which states that the granting of aerobic exercise can lower cholesterol levels LDL. The other studies have shown that after aerobic exercise for 9 months significantly decreased of LDL cholesterol levels.

HDL cholesterol levels after aquarobic dance is  $61.83 \pm 4.85$  higher than HDL cholesterol before aquarobic dance  $57.17 \pm 5.50$ . Statistical test results obtained value with the value  $t = -4.629$ ,  $p < 0.05$ . This is consistent with results of previous studies that doing aerobic exercise regularly can affect blood pressure, increase HDL cholesterol, improve insulin sensitivity and balance glukosa. increase in HDL cholesterol is likely due the increase apoprotein A-1 which is a precursor to the formation of cholesterol HDL, resulting in increased catabolism of triglyceride-rich lipoproteins, thus speeding up the transfer of the components of the surface portion HDL.(KANNAN1 et al. 2014) Increased lipoprotein cholesterol to HDL cholesterol levels aquarobic dance caused due to the use of fat as an energy source, resulting in a decrease in total cholesterol and Very low Density Lipoprotein (VLDL), which eventually led to increased HDL cholesterol,(Quig et al. 1983; Crouse et al. 1997) other possibilities due to the decreased activity of hepatic lipase (HL) and increased activity of the enzyme lecithin cholesterol acyltransferase (LCAT). The other studies have reported the existence are Some pa theories that try to explain the mechanism of the increase in HDL cholesterol due to physical exercise: (1) Physical exercise will increase the activity of the enzyme lipoprotein lipase (LPL) in the muscle tissue and fat tissue, which resulted in the catabolism of VLDL increased, so that ultimately will increase the levels of HDL cholesterol in plasma, because the components of the result is one of the VLDL catabolism of HDL cholesterol forming. Physical exercise will reduce the activity of Hepatic triglyceride-hydrolase enzyme in the liver, thus inhibiting the catabolism of cholesterol HDL.32 In general, an increase in the intensity of exercise (80% of the maximum DN) associated with HDL cholesterol tinggi.33 analysis of the dose-response exercise that shows that a volume of training with burning 1200-2200 calories/week is an effective exercise, may increase HDL cholesterol (2-8 mg/dL).(Nieman et al. 2002)

TG before aquarobic dance is  $119.17 \pm 35.14$  higher than after aquarobic dance  $99.33 \pm 29.95$ . Statistical test results obtained using a t-test value of  $t = 2.668$  with  $p < 0.05$ . The results of this study support that a volume of training with burning 1200-2200 calories/week is an effective exercise can lower triglycerides (5-38mg/ dL).(Nieman et al. 2002; Donges et al. 2010) When the fat intake less then the TG secreted into the blood too little, so that the levels of triglycerides in the blood serum is lower. A decrease in total cholesterol and TG levels associated with a reduction in LDL cholesterol. LDL cholesterol is the result of metabolic waste that releases VLDL triglycerides and its density is reduced so that gradually turns into cholesterol LDL.(Halbert et al. 1999)

**Discussion:**Physical activity is an important determinant of energy expenditure and regular exercise is essential for weight control and weight loss. The awareness about complications of obesity and the significance of exercise in reduction of cholesterol levels are becoming popular amongst people that are obvious with increase in the number of people walking for health, moving towards gyms and various physical activities.The response of the lipid profile to an exercise session or training program is dependent on the type of exercise undertaken, its intensity and frequency, the duration of each session, and the time spent on such a program.

Lipoproteins are transport vehicles in the circulation plasma that are composed of various lipids such as cholesterol, phospholipids, triglycerides and proteins known as apoproteins. The major classes of lipoproteins are chylomicrons, very low-density lipoprotein cholesterol (VLDL-C), LDL-C, and HDL-C. Chylomicrons are the largest lipoproteins, consisting of approximately 85% triglycerides. Triglycerides are the main type of lipids found in adipose tissue and in the diet. Once the triglycerides are removed from the chylomicron at receptor sites in the body, the chylomicron remnant is returned to the liver for further metabolism. The principal lipid of VLDL-C is also triglycerides (60 - 70%). On the other hand, HDL-C has an inverse relationship with coronary heart disease, offering a protecting mechanism against the development of CHD (Kannel, Castelli, & Gordon, 1971) . HDL-C is considered to be the most powerful lipid parameter for predicting CHD in people of all ages (Gordon et al., 1977) . The primary function of HDL-C is to transport cholesterol from the tissues and blood to the liver for excretion from the body or synthesis into bile acids. HDL-C also prevents the uptake of LDL-C at receptor sites in the body and participates in the metabolism of other lipoproteins.

HDL-C is predominantly composed of phospholipids and is separated into several subclasses, based on size and particle density. The major subclasses are referred to as HDL2 and HDL3. It is known that females have a higher content of HDL2 than males, which helps to protect women from developing CHD (Wood & Haskell, 1979) . women generally have lower total cholesterol and LDL-C values than men. After menopause, these values equal or exceed those of men, however (Heiss et al., 1980) . Women also tend to have higher HDL-C (mainly HDL2) and lower triglyceride concentrations than men. This may be partially explained by the relatively higher lipoprotein lipase activity in women (Haskell, 1984) . Also, estrogen seems to have a major role in lowering the risk of CHD for premenopausal women (Manson et al., 1992). However, female sex hormones, found in oral contraceptives or used in hormone replacement therapies have variable effects on lipoprotein profiles. Additionally, women who consume alcohol in moderation tend to have higher HDL-C levels than nondrinkers; while women who smoke have much lower levels than nonsmokersThe importance of exercise has been emphasised in our study and it has been suggested that exercise prescription should be based on the health and fitness levels of the individual. It should be progressively introduced to individuals who are relatively sedentary and overweight. Instead of using lifestyle modification as a treatment measure after the onset of the disease, approach to weight reduction and improvement in cardiovascular fitness should include physical activity and diet modification which was a limitation of this study. Long term studies are required to confirm these findings. High intensity intermittent exercise which can be done for 15 – 20 min for 3-4 days/week has produced a significant change in the HDL and TG.

## **Conclusion**

Based on the results of statistical calculations, theoretical discussion and support a review of the above, the conclusion can be drawn as follows: 1) aquarobic dance exercise program with intensity of 60-85% HRmax, 3 times/week for 12 weeks turned out to be statistically have a significant effect on blood lipid profile and in particular lead to a decrease in total cholesterol, LDL cholesterol and TG; 2) exercise the same aquarobic dance also statistically affect increasing HDL cholesterol is another fraction in blood lipid profiles.

Aquarobic dance it was benefits to the health, increasing HDL and appearance characterized by decreased body fat percentage and skin fat lipolytic is more active than the fat from other deposits. Aquarobics exercise can be used as effective non-pharmacological treatment to prevent diseases. Program for management lipid profile or blood cholesterol with exercise aquarobic dance should pay attention to dose adequate exercise, and avoiding the imposition of self (out of the concept of exercise aerobic) while keeping the possibility of accumulation of lactic acid in the blood, which is less favorable to the formation of HDL cholesterol in the body.

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## Ethnicity and Cardio Respiratory Fitness of Tribal Boys : A Comparative Study

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### Abstract

The aim of the present study is to compare cardio respiratory fitness of tribal boys belonging to Gond, Halba, Kamar and Oraon tribes. For present study, 50 tribal boys from Gond tribe (Ave. age. 14.76 yrs.), 50 tribal boys from Kamar tribe (Ave. age 13.42 yrs), 50 tribal boys from Halba tribe (Ave. age 14.68 yrs) and 50 tribal boys from Oraon tribe (Ave. age 14.62 yrs) were randomly selected. The sample was collected from schools operational in Jashpur, Sariapali, Bastar, Ambikapur, Raigarh, Dhamtari and Balod districts of Chhattisgarh. 1/2 mile run/walk test as described in American Alliance for Health, Physical Education and Recreation -AAHPER (1980) was used to collect data on cardio respiratory fitness. Result obtained with the help of One Way ANOVA indicates a non-significant difference in cardio respiratory fitness of tribal boys from different tribal ethnicity i.e. Gond, Halba, Kamar and Oraon respectively. It was concluded that ethnicity has no significant impact upon cardio respiratory fitness of tribal boys of Chhattisgarh.

**Keywords :** Ethnicity, tribal, cardio respiratory fitness

### Introduction

The benefits of good health related fitness in day-to-day life is very well known to human being. Climbing stairs or running to catch a bus; lifting a heavy luggage; having good flexibility of joints and digging or plough farm fields are some among many day-to-day routine work which requires a certain level of health related fitness. One such component of health related fitness is cardio respiratory fitness. It is the combined ability of circulatory and respiratory system to supply adequate oxygen to skeletal muscles to maintain and sustain rigorous physical activity. The utility of cardio respiratory fitness lies in its importance in reducing the potential risk of lung and heart disease, diabetes as well as stroke and many other diseases. A main component of health related fitness i.e. cardio respiratory fitness is also important during childhood and adolescence period because deficient cardio respiratory fitness in this period can lead to serious diseases in later life. Knowledge and importance of health related fitness makes it an important public health issue especially in tribal population of India who are somewhat deprived of medical facilities and their socio economic status is also poor. In this context researcher such as Singh and Sidhu (1987), Mitra et al. (2002), Chowdhury, S.D. (2007), Bhardwaj and Kapoor (2007), Shailesh and Mehrotra (2014), Agashe and Shambharkar (2016) have conducted studies on tribal population to assess anthropometric, fitness, body type, personality etc. but effect of ethnicity has not been observed on school going tribal boys of Chhattisgarh. Hence the present study was planned.

### Hypothesis

Ethnicity will significantly influence cardio respiratory fitness of school going tribal boys of Chhattisgarh.

### Methodology :-

The following methodological steps were taken in order to conduct the present study.

**Sample :-**For present study, 50 tribal boys from Gond tribe (Ave. age. 14.76 yrs.), 50 tribal boys from Kamar tribe (Ave. age 13.42 yrs), 50 tribal boys from Halba tribe (Ave. age 14.68 yrs) and 50 tribal boys from Oraon tribe (Ave. age 14.62 yrs) were randomly selected. The sample was collected from schools operational in Jashpur, Sariapali, Bastar, Ambikapur, Raigarh, Dhamtari, Balod districts of Chhattisgarh.

Tools:

1/2 mile run-walk test:

1/2 mile run/walk test as described in American Alliance for Health, Physical Education and Recreation - AAHPER (1980) was used to collected data on cardio respiratory fitness. The time taken to run 1/2 mile recorded in minutes and seconds is the score of this test item.

Procedure:

50 Gond, 50 Kamar, 50 Halba and 50 Oraon tribal boys were selected for the present study were assured that no physical harm is associated with this test. The administration of this test was done after taking prior permission from school authorities and availability of the students. The time taken by each subject on this test was penned and analysis was performed with the help of One Way Anova. Results depicted in table 1.

### Analysis Of Data

Table 1:One Way ANOVA

Descriptive Statistics : Cardio Respiratory Fitness of Gond, Kamar, Halba and Oraon Tribal Boys (N=200)

Groups	N	Cardio Vascular Fitness	
		Mean	S.D.
Gond Tribal Boys	50	1.44	0.09
Kamar Tribal Boys	50	1.45	0.14
Halba Tribal Boys	50	1.44	0.17
Oreon Tribal Boys	50	1.40	0.06
F=1.62, p>.05			

F = 1.62 shown in table 1 shows non-significant difference in cardio respiratory fitness of tribal boys belonging to Gond, Kamar, Halba and Oraon tribes. To ascertain and validate this result, least significant difference test was used. Results depicted in table 2.

Table 2

**Comparison of Mean Scores on 1/2 mile run in Gond, Kamar, Halba and Oreon Tribal Boys (N=200)Least Significant Difference Test with Significance Level .05**

Mean (I)	Mean (J)	Mean Difference (I-J)
Gond Tribal Boys	Kamar Tribal Boys	0.009
	Halba Tribal Boys	0.002
	Oreon Tribal Boys	0.04*
Kamar Tribal Boys	Halba Tribal Boys	0.010
	Oraon Tribal Boys	0.05*
Halba Tribal Boys	Oraon Tribal Boys	0.030

\* Significant at .05 level

Table 2 gives following facts :

- The difference in mean 1/2 mile run scores of Gond and Kamar tribal boys as well as Gond and Halba tribal boys was found to be statistically insignificant.
- 1/2 mile run timing of Oraon boys was found to be significantly lower as compared to Gond tribal boys.
- The difference in mean 1/2 mile run timings of Kamar and Halba tribal boys as well as Halba and Oraon tribal boys was found to be statistically insignificant.
- 1/2 mile run timing of Oraon boys was found to be significantly lower as compared to Gond tribal boys.

On the basis of analysis of data, following results are obtained :

### **Results :**

1/2 mile run performance of boys belonging to Gond, Halba, Kamar and Oraon tribes shows that boys from Oraon tribe have significantly higher level of cardio respiratory fitness as compared to boys from Gond, Halba and Kamar ethnic tribes but these results was not global and were not conclusive statistically.

### **Discussion:**

Analysis of data reveal that cardio respiratory fitness of tribal school boys belonging to Gond, Halba, Kamar and Oreon tribes are somewhat similar. It may be due to the fact that all these tribes are from almost same socio economic status and same kind of medical facilities and government efforts are available to all of them. This may be the reason for statistically non-significant difference in cardio respiratory fitness of tribal boys from various ethnic tribes was observed.

### **Conclusion:**

On the basis of results it was concluded that role of ethnicity as an influencing factor as far as cardio respiratory fitness of tribal boys is concerned remains inconclusive.

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## **Mental Toughness Analysis Of Rural And Urban Female Players- A Comparative Study**

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### **Abstract**

The purpose of the study was to compare the mental toughness between college level rural and urban female team game players. The present study was conducted on a sample of sixty (N=60) female team games players, of age ranging from 19 to 25 years, which includes thirty (N<sub>1</sub>=30) players from rural and thirty (N<sub>2</sub>=30) from urban colleges, which actually participated in various inter-college competitions of Punjabi University, Patiala, Punjab, INDIA. All the participants were informed about the aim and methodology of the study and they volunteered to participate in this study. Mental Toughness questionnaire developed by Goldberg (1998) was administered for data collection. The independent samples t-test was applied to assess the differences between college level rural and urban female team games players. The level of significance was set at 0.05. Results revealed statistically significant ( $p < 0.05$ ) differences between college level rural and urban female team game players with regard to Rebound Ability, Ability to Handle Pressure, Concentration, Confidence, Motivation and Overall Mental Toughness.

Keywords: Mental toughness, rural, urban.

### **Introduction**

Many coaches are becoming aware of the importance of developing mentally tough performers and are designing programs to develop it in their athletes. One of the most significant problems in designing these programs is the inconsistency in the definition and description of mental toughness. Weinberg et al. (2011) concluded that mental toughness is a characteristic, many believe to be important for success in sport; many coaches view mental toughness as a quality that must be considered in the recruitment of athletes. In fact Gould et al. (1987) views it as the most important psychological attribute in determining success. Middlenton et al. (2004) concluded that athletes from a variety of sports and proposed that the mental toughness is strong determination in the face of adversity. Clough et al. (2002) used four C's to describe mental toughness. They have suggested that challenge, commitment, control and confidence are central to mental toughness. While variability among the definitions exists, mental toughness related with the skillful demonstration of collection of psychological skills. Jones et al. (2002) defined mental toughness as the natural or developed psychological edge that enables you to generally cope better than your opponents with the many demands that sport places on a performer. Specifically, be more consistent and better than your opponents in remaining determined, focused, confident, and in control under pressure. The training of sports psychology programmes is key to success as Kureger (1984) and Loehr (1982, 86) defined in their studies. Bull et al. (2005) have suggested that the characteristics of mental toughness in a global sense might be distinct from how it is understood in a particular sport. Gould et al. (2002) suggested that mental toughness in Olympic champions plays a significant contributor to sports performance enhancement. Similarly, it is possible that constituents of mental toughness differ in particular sports. No doubt, extensive work has been reported in the area of mental toughness during last decades and the concept has diversified applications in various fields of human activity. But the present study particularly applied on female team game players belongs to rural and urban colleges, which actually is an attempt to explore the possibility of, there could be significant differences between them.

## Method

A sample of sixty (N=60) female team game players, of age ranging from 19 to 25 years, which includes thirty (N<sub>1</sub>=30) players from rural and thirty (N<sub>2</sub>=30) players from urban colleges, which actually participated in various inter-college competitions of Punjabi University, Patiala, Punjab, INDIA. All the participants were informed about the aim and methodology of the study and they volunteered to participate in this study. Mental toughness was measured by applying mental toughness questionnaire developed by Goldberg (1998), which consists of 30 items measuring the mental toughness in five areas. Data was analyzed using SPSS Version 16.0 (Statistical Package for the Social Sciences, version 16.0, SPSS Inc, Chicago, IL, USA). Independent samples t-test was used to test if population means estimated by two independent samples differed significantly. The level of significance was set at 0.05.

## Analysis Of Data

Table-1. Mean values ( $\pm$ SD), standard error difference of the mean and test statistic t of Mental Toughness between college level Rural and Urban female team game players.

VARIABLES	Rural (N <sub>1</sub> = 30)		Urban (N <sub>2</sub> = 30)		Mean Difference	SEDM	t-value	Sig.
	Mean	SD	Mean	SD				
Rebound Ability	3.27	0.98	3.87	0.82	0.6	0.23	2.572*	0.013
Ability To Handle Pressure	4.37	0.93	3.67	0.84	0.7	0.23	3.056*	0.003
Concentration	3.70	0.79	4.20	0.66	0.5	0.19	2.645*	0.011
Confidence	4.37	0.72	3.77	1.01	0.6	0.22	2.658*	0.010
Motivation	4.23	0.93	3.50	0.78	0.73	0.22	3.304*	0.002
Mental Toughness (Total)	19.97	1.97	19.00	1.68	0.97	0.47	2.042*	0.046

\*Significant at 0.05 level

Table 1 presents the mean scores of college level rural and urban female team game players with regard to Mental Toughness. The rural female team game players when compared to urban, have exhibited significant ( $p < 0.05$ ) differences with regard to Rebound Ability, Ability to Handle Pressure, Concentration, Confidence, Motivation and Overall Mental Toughness.

## Findings

Findings of the present study showed that rural female team game players have exhibited statistically significant better with regard to ability to handle pressure, confidence, motivation and mental toughness (total), when compared to urban female team game players. However, urban female team game players have exhibited statistically significant better with regard to rebound ability and concentration than their counterpart; rural female team game players. Present research findings are partially in line with the study of Singh, J. et al. (2012), they concluded that there was significant differences between foreigner professional footballers and Indian non-professional footballers on the account to rebound ability, ability to handle pressure, confidence, motivation and mental toughness (total). Ramesh Chand Yadav (2014) also revealed in his study that mental toughness of national female volleyball players is higher than the national female kabaddi players. Rajender Singh and Rajesh Kumar (2011) concluded in their study that All India intervarsity soccer players exhibited significantly differed in mental toughness than their counterpart; inter-collegiate soccer players.

## Conclusion

It is concluded that statistically significant differences were found between rural and urban female team game players with regard Rebound Ability, Ability to Handle Pressure, Concentration, Confidence, Motivation and Overall Mental Toughness. The rural female team game players had greater Ability to Handle Pressure, Confidence, Motivation and Overall Mental Toughness than urban female team game players. However, urban female team game players exhibited significantly better in respect to Concentration and Motivation than rural female team game players.

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## **Role Of Sports Of Osmania University In Building The Nation**

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### **Introduction:**

University Education is decisive phase of life where the students explore the untrodden paths of success, setting quality standards in the field of Interest.**Osmania University** is a public state university located in Hyderabad, India, founded in 1918 with the help of chief Architect of Mahbub Ali Khan - Nawab Sarwar Jung. It was established and named after the seventh and last Nizam of Hyderabad, Nawab Mir Osman Ali Khan. The propitious moment came on 26th April, 1917 when a Firman was issued for the establishment of the University. It is the third oldest university in southern India, and the first to be established in the erstwhile princely State of Hyderabad. The university was established to cater to modern, secular, cultural, Islamic and regional arts education, for which the medium of instruction was selected as Urdu and English as a compulsory language, making it the first university in the Indian subcontinent to provide education in native and Urdu language. From 1918 and well into the 1950s, students at Osmania University wore the Deccani sherwani and pyjama or salwar kameez and saris (the latter for married women), almost like a school uniform. Students were highly disciplined and there was pin-drop silence in the class and the library.

Extra curricular Activities including sports always has been considered as an integral part of education and helps in holistic development of a Student. Academic Learning and Sports Education are complements of each other. Sports not only Teaches the Physical fitness and Skills and it also promote the obedience, discipline, determination to win, will power, power of reasoning, mental development, attitude etc for the Students.

The Osmania University is having campus, constituent and affiliated colleges with lot of Sports infrastructure facilities. Many of the Sports Persons of Osmania University has brought laurels to the country at International Level, State Level and at Inter University level.

The distinguished sports personalities of Osmania University in Olympics are Gagan Narang (Bronze medal in shooting), P.V.Sindhu (Silver Medal in shuttle Badminton), Pullela Gopi Chand (All England Badminton Champion), S.S.Salam (Foot Ball), S.S.Raheem (Foot ball) S.S.Hakeem(Foot Ball) Sumeeth Reddy (Shuttle Badminton) etc.

The distinguished sports Personalities who received Highest award Winners from Govt. of India Pullela Gopi Chand(Padma Bhusan, Padma Shri, Rajiv Khel Ratna and Dronacharya Awardee -Badminton) S.M.Arif ( Padmashri and Dronacharya Awardee -Badminton) Mir Khasim Ali ( Arjuna Award-Table Tennis), G.Mulini Reddy (Arjuna Award –Volley Ball) Mithali Raj (Padma shree –Womens Cricket) C.S.Pradipak (Arjuna Award-Yatching), Anup Yama (Roller skating) etc.

The distinguished sports personalities of Osmania University Played at International Level Mohammed Azharuddin (Former Indian Team Captain), M.L.Jaisimiha (Former Test Cricketer), Dhanalaxmi (Athletics)P.Shankar (Athletics), Kalpana Reddy (Athletics) Nagamani (Athletics) Lavanya Reddy (Athletics) R.P.K.Singh (Boxing) Narsing Rao (Boxing), Omkar Yadav (Boxing) G.P. Palguna (Foot Ball) Chaitanya (Power Lifting). Nikith Zareen of OU is the World Junior Boxing Champion at Present studying in AV College.

The distinguished Sports Personalities of Osmania University are also in Top Officials Like Shyam Benegal (OU Swimmer)C.V. Anand I.P.S (Former Cricketer), Shri Kiran Kumar Reddy, Former Chief Minister of Govt. of A.P. ( Former Cricketer) Asaduddin Owaisi, Member of Parliament (Former Cricketer), Harsha Bhogle (Sports Commentator) etc.

The distinguished Sports Administrators from Osmania University are Prof.K.Ranga Rao, Former Director of Physical Education at Present President, Olympic Association of Telangana, Dr.S.R.Prem Raj, Secretary General, Olympic Association of Telangana, Jeelani Pairak, World Sports Research Centre, India

The Students of Osmania University also Participated in the World University Games. Mr.Shiva Kumar, Secured 3 Silver Medal in Weight Lifting, Other who represented Arjun Reddy, Pooja ,Poornima, Rohith Yadav, Ms.Megana, Ms.Ruthvika in Badminton, Deexitha (Weight lifting)Charan Reddy (Archery) etc.

Ghaus Mohammad Khan, first Director of Physical Education, Osmania University was first Indian to reach the quarterfinals at Wimbledon, achieved in 1939 where he lost to American champion Bobby Riggs.For this efforts in the realm of sports Ghaus Mohammad Khan was awarded the title Padmashri by the Government of India in the year 1971.

Osmania University was almost unbeatable in the All India Inter University Football in the later part of '50s." Osmania University won All India University Football in 1954, 1955 and 1959. They also won several All India level tournaments. Osmania University Team has Participated in the World Inter University Foot Ball Championships in 1956 at Afghanistan.

The Grounds of Osmania University regularly used for practice for Athletics, Hockey, Cricket, Foot Ball, Hand ball etc. The Grounds of Nizam College is famous in boxing and brought many laurels to the University more than 30 Students become International Boxers and more than 200 students brought Medals in Boxing at Inter University Level under the coaching of Mr.K.R.Steven and Mr.E.Chiranjeevi, Boxing Coaches, Cricketing, athletics, Basket ball practice was done at Nizam college grounds. P.G.College, Secunderabad grounds is famous in Hockey and Produced many Players of High caliber.

The OU Women's College grounds are regularly used for Women's Kabbadi and Kho Kho. The affiliated Colleges like St.Anns College for Women, St. Francis College, Bhavans Vivekananda, Loyola Academy, A.V.College, S.P.College, V.V.College, Anwarulullom, MJ Engineering College, CBIT etc promotes lot of sporting activity among the degree college students.

Prof.Rajesh Kumar, Secretary,OU Sports Board is a International Master Athlete participated in the World masters Athletics at Finland, Asian Masters Athletics Championships at Thailand, Malaysia, Chinese Taipei and Singapore.

Prof.Syed Ibrahim, Dr. B.Somalingam,. J.Jairaj,Prof, K.Surender Reddy, Jyothi Joshi, Prof.J.Prabhakar Rao, Prof. P.Venkat Reddy, Prof.L.B.Laxmikanth Rathod, Prof.RajeshKumar, Prof.V.Satyanaryana, Dr.B.Sunil kumar and Dr.K.Deepla, Physical Education faculty has Participated in the International Conferences held at Ethiopia, Mauritius, Thailand, Vietnam, Malaysia, Turkey, China etc.

Dr.K.Suresh Reddy, Dr.G.Shyam Mohan Reddy, Dr.K.Kanna Reddy, Dr.R.Harinarayana Rao , Dr.Vimala Reddy, Dr.G.J.Grace, participated in the International conferences at China, Thailand, Malaysia and Istanbul.

The Physical Education fraternity of Osmania University also conducted International Conference to promote the Research in Physical Education and sports.

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Wikipedia, Osmania University

## **Comparison Of Circuit Training Methods On Performance Variables Of Scheduled Caste Scheduled Tribe Girls**

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### **Abstract**

This paper tries to explain the importance of training in the performance of an athlete. Sixty students were randomly selected from secondary schools. Out of them, SC/ST students were 30 and SC/ST students were 30 in number. Then 30 SC/ST students were divided into Two groups, named as Continuous Circuit Training Group (CCT), Interval Circuit Training Group (ICT). After dividing into six groups, experimental treatments i.e. Continuous Circuit Training Method and Interval Circuit Training Method were applied to CCT and ICT groups only. Criterion measures were 50m run, shuttle run, standing broad jump, cooper's 12 minutes Run and walk and 800m run for middle distance running performance. Treatments were applied 3 days per week for 8 weeks only. The subjects were tested pre-test and post-test. After collection of Pre-test and Post-test scores I analyzed scored results, collected from different groups by using statistical methods and the results are presented in this article.

**KEYWORD:** Continuous Circuit Training, Interval Circuit Training, Control Group.

### **Introduction**

**Circuit training** is a form of conditioning combining resistance training and high-intensity aerobics It is designed to be easy to follow and target strength building as well as muscular endurance. An exercise "circuit" is one completion of all prescribed exercises in the program. Circuit training is probably the most common training regime used by a wide range of sports and activities in order to improve performance. A circuit consists of a number of different stations at which the athlete performs a given exercise as many times as possible within a given time period. When the time is completed the individual moves on to next station & performs a different exercise for a similar period of time and so on around the various stations. Circuit training is designed to develop cardio-respiratory endurance as well as flexibility strength and muscular endurance in essential muscle groups. It is an efficient training method in terms of gain made in a short time. Circuit training can provide vigorous activity in a number of fitness and motor ability activities and is aimed at developing all the basic physical fitness components performed in an interesting and imaginative fashion. Circuit training is commonly used in two types as

#### **1. Continuous Circuit Training 2. Interval Circuit Training**

Sixty students (30 SC/ST ) of 12 to 15 years age group of secondary School students were divided into two groups. Out of these, three groups are SC/ST Girls and other three groups are non-SC/ST Girls. All subjects were initially tested to measure their

Performance in 800 M run and other variables. After conducting initial test, the SC/ST subjects were assigned to two experimental groups and one control group of ten subjects each on the basis of their Mean & Standard deviation in 800 M performance. Same process was applied in forming groups for non-SC/ST subjects. Treatments were randomly assigned to two groups, while the other group was acted as a control. Experimental Group I was put into continuous circuit training (C.C.T.) , Experimental Group II to Interval circuit training (I.C.T.) and group „C" to Control ( C ).Third group performed the routine programme of daily school life only.

## Application Of Treatments

In the present study two experimental treatments in the form of Continuous and Interval circuit training method were applied to two different experimental groups named as Continuous circuit training group and Interval circuit training group for SC/ST Girls. The same process followed in case of non-SC/Stops. The selection of items were done as per professor Dr. Winfried Joch – DL V Lehrwert

### Exercises For Continuous And Interval Circuit Training

1 <sup>st</sup> Station	-	Step ups	-	24 Repetitions
2 <sup>nd</sup> Station	-	Push ups	-	12 Repetitions
3 <sup>rd</sup> Station	-	Lean back squat	-	15 Repetitions
4 <sup>th</sup> Station	-	Squat thrust	-	20 Repetitions
5 <sup>th</sup> Station	-	Sit ups (Bent Knees)	-	15 Repetitions
6 <sup>th</sup> Station	-	Triceps extension	-	20 Repetitions
7 <sup>th</sup> Station	-	Hyper extension of Back	-	16 Repetitions
8 <sup>th</sup> Station	-	Burpee	-	10 Repetitions

Above mentioned exercises were used by all treatment groups of SC/ST and non-SC/ST boys according to Continuous and Interval method. Pan and Samantha (1990) conducted a study with 30 secondary school boys of age group 14 to 16 years. Treatments were applied as Interval training, continuous training & control for six weeks. Results revealed that performance in 800 M run increased significantly at 0.05 level with the application of training methods but no significance was found in cardio-respiratory endurance, 50 M run and Resting heart rate

### Conclusion

On the basis of the analytical estimate of the results and within the limitations of the present study, the following conclusions have been drawn- On 50 M Run, Shuttle Run, Standing Broad Jump, 800 M. Run and Cooper's 12 minute Walk-Run test. Due to Continuous & Interval circuit training methods applied to SC/ST Girls the performance in 50M. run for speed improved in general i.e. the subjects complete the distance in less time. But statistically significant result obtained in 50 M run through Interval circuit training method for SC/STGirls only. Both SC/ST improved their performance on shuttle run performance (agility) in general through continuous and Interval circuit training methods, though statistically significant result was obtained through continuous and Interval circuit training methods. In standing broad jump performance (leg strength) both the SC/ST Girls enhanced the distance through continuous and Interval training methods, though the result was statistical insignificant. In 800 M. run both the SC/ST Girls showed general improvement in performance. Statistically significant improvement in 800 M performance. In Cooper's 12 minute Run-walk-test for cardio-respiratory endurance showed slight improvement in gaining distance through continuous circuit training and Interval circuit training methods, but they are not statistically significant. Circuit training methods is a very good training for improvement of athletes performance. Circuit training is designed to develop cardio-respiratory endurance as well as flexibility,

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