



Comparing of Body mass index and by Sit and reach flexibility test of Tsinghua University Beijing China and University of Sindh Pakistan students

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Abstract: Introduction: The BMI and sit and reach test are the most common assessment in health related physical fitness. Major aims were analyzed to explore the comparatively same age and gender BMI and flexibility status and dissimilarity of diverse nation's young adults of 18-23 years gender group of Tsinghua University Beijing China (TUBC) and University of Sindh Pakistan (UOSP) male and female students. In this study we were compared the BMI and flexibility of identical age and masculinity group of two diverse nations china and Pakistan young adults students of bilateral Universities.

Method: An experimental method was used to collect the normative data of TUBC and UOSP students. All the procedures were applied by ACSM health related fitness assessment battery, gauging BMI by Quetelet procedure and sit and reach in cm and three trails were administered of 150 male and 150 female of each university students during 2013 spring semester.

Result: The mean of male TUBC and UOSP BMI (M=22.63, SD =2.99, lower than UOSP M=23.3, SD= 4.15, t= -1.64, p > 0.05 and female, M =21.22, SD =2.80, lower than UOSP M=22.22, SD= 3.41, t= -2.79, p < 0.05 significance. SRT mean of male TUBC M=9.60± SD =5.95 UOSP M=9.14± SD= 8.61, t= 0.54, p <0.05 and female TUBC M=11.05± SD =5.84, UOSP M=10.87± SD= 4.32, t= 0.30, p < 0.05.

Conclusion: The study magnitudes discovered that the selected age group 10% overweight and 5% obese of UOSP male and female students were higher than TUBC and in flexibility TUBC both gender were better than UOSP. However, the numerical information disclosed TUBC both gender students obesity and flexibility status were recovering than UOSP students. The null hypothesis rejected expressively p<0.05 significantly except male obesity ratio..

Keyword: BMI, flexibility, Fitness, status, assessment, physical activity

1. INTRODUCTION

Obesity has become a major health, social and economic burden of today's world.(ACMS) The prevalence of overweight and obesity is instigated of significant public health problems throughout the global, and numerous countries are undergoing in same problems. (Jakicic *et al.*, 2011) The explanations of China's and Pakistan recent epidemic of overweight and obesity include changes to the traditional diet, reduced levels of physical activity, and increased sedentary lifestyles. Large volumes of daily sedentary time i.e. too much sitting and inactiveness are an integral portion of people have adapted in modern-days physical and social deskbound environments.(Yangfang, 2006) The three major NCDs with highest mortality rate are cardiovascular diseases; cancers and chronic respiratory diseases. ((Akhtar Sherin, 2013). The leading NCDs are preventable and share some common moldable risk factors like smoking, alcohol, diabetes mellitus, hypertension, dyslipidemia, overweight/obesity, unhealthy diet and insufficient physical activity. (World Health Organization, 1995) Research indicated that the prevalence of obesity in China is relatively low as compared to Western countries. (WHO, 2005). Health and fitness activities contribute to improve the body

health status and protected various body pains and aches also have independent effects on other health related outcomes. The main objectives of study is to explore epidemiological aspects of BMI and flexibility impacts of similar age and gender group of young adult's students of Tsinghua University Beijing China (TUBC) and University of Sindh Pakistan (UOSP) and compared their physiological aspects of BMI and flexibility status. Health and fitness assessment is an important cornerstone in both the prevention and treatment of physical deformity especially burning physical fat and lower back pain. Commonly fitness assessment was apparent concerned with exacerbating symptoms and cause and effects of permanent damages. The study first time initiated and explored that the strength and weakness and health and fitness status of 18-23 ages of both gender groups of two diverse nations' universities students. It is general perception of global society that selected age group masculinities have no any physical and biomechanical problem in their routine environment. Instead of these facts, they are fronting a lot of physical and functional problem in their monotonous life. This research evidence has tried to reconnoiter the risk of epidemic premature effects of illness. Due to high fat percentage of body weight ricks factors prevent

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biomechanical activities. Particularly current research indicated that excessive activities restrictions are really the opposite of what a painful sign and symptoms that prevent the flexibility movement due to overweight and obesity. Those who are overweight or obese are mechanically caused by serious conditions such as herniated disks, spinal stenosis; typical causes e.g. sports injury, lifting bending or reaching disorders. The risk also increases for those who are underweight that exhibit mortality rate up to 25% higher than those who have BMI 30+ obese. (WHO, 1998) In this study also highlighted kinsiological deficiencies caused by overweight and obesity and effected on flexibility movement of the young adults of both universities male and female students. This study also considered about kinsiological disorders and perceptible reason of young students. Enquiry were scrutinized the cause and effects of their corporal and biological complaint of identical age and gender group students. Evaluation of BMI is useful tool to screen the learner's population health to differentiate fat and lean body mass of high risk categories. The obesity and flexibility complications are major issues of conventional activities of the routine task particularly selected age group. This is original inquiry and first time in the history conducted in between TUBC and UOSP on this major epidemiological issue of health and fitness HF status and appraised the physical and physiological disorders of performance of mutual chore and produce primary normative data that explored the origin and consequence. The study data elaborated the BMI and flexibility prominence of both university students and highlighted the forte and febleness of each participant's subject. This research explored the physical and physiological complains of 18-23 years student of TUBC and UOSP.

2. METHOD

An experimental method was used to collect the normative data of TUBC and UOSP students. There are different approaches of BMI and flexibility assessment used to evaluate the both factors of normal participants. However in BMI Quetelet index measuring process applied to analysis weight and Height square and in flexibility normative appraisal scale of ACSM in cm was used. Both tests were administered and analyzed by ACSM normative percentile assessment criteria that proposed by both University Research Study committees (URSC). Retaining BMI and adequate joint flexibility is an important for functional health. Decreased flexibility is generally not a significant health problem for young adult. However, students need to understand the importance and maintenance of ROM. inquiry were assessed the body fat ratio and flexibility of lower back and upper muscles elasticity along with hamstring muscles of male and female students of both universities. The study objectives were appraisal fitness

status and apprehended the vitality of fitness component in their general health context.

2.1 Subject participants

There were 150 males and 150 females of each University healthy learners voluntarily participated in the BMI and sit and reach test of 18 -23 years age group of both universities students during the 2011-2012 academic session. Keep in view the protocols of human health metrics as per study requirement and approved by the both universities research studies committees (URSC) as part of the investigation. The PAR-Q forms were filled by both universities students (appendix A). The ideas were harmonized population of healthy subjects in order to obtain an optimal and the significance of evidence based research.

2.2 Procedure

The BMI and sit and reach assessment was executed the procedures outlined in the ACSM manual. The BMI assessed more widely used and accepted because values correlate better with measures of body fatness. Quetelet index is used to assess weight relative to height and is calculated by dividing body weight in kilograms by height in meters squared formula ACSM¹. Calculated normative data with the WHO international normative scale criteria of BMI and calculated the percentage of body fat of each subject participants of both universities students. The assessments were taken placed in two diverse universities environment of bilateral countries. In TUBC the both assessments were administered at Sports and Health Research Center laboratory (SHRCL) assessed the BMI (height and weight) and SRT on sturdy flexometer device and collected the electronically numerical performance data information of computer base. Instead of due to non-availability of lab facility in UOSP the BMI and sit and reach test were administered at class room based, used tape and weight machine to measured height and weight and sit and reach on the 13" inches Class room rectangle spot (shown in snaps) with measurement scale during the physical activity practical classes. The assessments were conducted at Center for Physical Education, Health and Sports Science (CPEHSS) University of Sindh Pakistan. All subject participants were filled PAR-Q form and then assessed weight in kg and height in meters. However in sit and reach test students were performed 10 minute warm up and did the static stretching exercises of upper and lower part of body. After worm up physical education qualified teacher (PEQT) demonstrated all protocols and procedure of sit and reach test and then each participant understood all the procedures then immediately the flexibility tests were executed one by one of each subject participants. The subject participants sat on the floor without shoes, and fully extended both leg so that the sole of the foot was flat against the end of the spot

that showed in snaps. The subject should move forward and reach with both hands as far as possible, holding this position approximately 3 seconds. Be sure that the participant keeps the hands parallel and does not lead with one hand. Fingertips can be overlapped and should be in contact with the measuring portion or yardstick of the sit-and-reach spot. Each subject was performed three trials and out of these the best trial was employed for conclusion.

2.3 Instruments: Flexometer, Weight machine, Measurement tape. Scale

2.4 Statistical Analysis: The data was collected by paper pen bases then analyzed by using of MS-excel and IBM SPSS 20 software's respectively

3. RESULT

In BMI assessment the outcomes were expressed the mean (M) and standard deviation (SD) of weight and height of TUBC both gender students were higher than UOSP students as described in **Table 1**. The male mean of TUBC $M=22.63$, $SD=2.99$, lower than UOSP $M=23.3$, $SD=4.15$, $t=-1.64$, $CI-1.50-0.15$ $p > 0.05$ and in female TUBC $M=21.22$, $SD=2.80$, lower than UOSP $M=22.22$, $SD=3.41$, $t=-2.79$, $CI-1.71-0.30$ $p < 0.05$ as shown in (**Table 1 and 2**) respectively. However the 10% overweight and 5% obese of UOSP both gender were higher BMI than TUBC both gender that shown in (**Fig.1**).

In sit and reach flexibility test analyzed flexibility status of both university students. The data discovered that average mean of male groups of TUBC $M=9.60 \pm SD=5.95$ UOSP $M=9.14 \pm SD=8.61$, $t=0.54$, $CI-1.20-2.14$ $p < 0.05$ and in female comparison of TUBC $M=11.05 \pm SD=5.84$, UOSP $M=10.87 \pm SD=4.32$, $t=0.30$, $CI-0.99-1.34$ $p < 0.05$ demonstrated in table 2 respectively. In average percentage of TUBC 91% and UOSP 92% male and in female TUBC 97% and UOSP 94% were expected level shown (**Fig. 2**).

4. DISCUSSION

Many studies on the validity and reliability of BMI and sit and reach test protocols had been reported and numbers of had proposed. The World Health Organization (WHO) expresses overweight and obesity on BMI at >25 and $30+kg/hm^2$ respectively in child and younger adult inhabitants (WHO, 1996). However, there is cumulative indication that these cut-off tenets are not operative for all populaces as concerned between BMI and body fat percentage fluctuates between population clusters as according to their biotic environment. In BMI statistically TUBC mean of height and weight were higher than UOSP as depicted in Table 1 and 2.

The average mean of TUBC was lower than UOSP both gender students because of overweight and obese ratio higher than those of TUBC students. According to BMI outcomes the overall BMI ratio of 23% overweight and 6% obese of UOSP male and female students were higher than TUBC that illustrated in table 4. However the male group students $t=-1.64$, $p > 0.05$ the null hypothesis was not rejected. It was presumed that the comparative variance of TUBC and UOSP male students were identical BMI and in female TUBC BMI ratio was significant. The statistical difference shown as female $t=-2.79$, $p < 0.05$ significant and the null hypothesis was rejected and assumed that female student variances were not equal. However conclusion indicated that the TUBC female BMI were stable and better than UOSP female students. Conversely, a study of Jackson and Baker reported that examined the relations between the sit and reach test and criterion measures of hamstring and low back flexibility in girls of 13 years–15. They found validity coefficients of $r = 0.64$ between the SRT and a criterion measure for hamstring flexibility, and $r = 0.28$. When compared with a criterion measured for low back flexibility Interpretation of flexibility assessment scrutinized the overall results of sit and reach test of both genders of TUBC 97% were higher than UOSP 93% indicated in table 4 according to research criteria, and the different is significant $t = 0.54$, $p < 0.05$ (Male) and $t = 0.30$, $p < 0.05$ (female) the null hypothesis were rejected and conclusion assumed the variance of both groups at 95% CI shown in table 3 respectively.

5. CONCLUSION

The study magnitudes discovered that the selected age group 10% overweight and 5% obese of UOSP male and female students were higher than TUBC and in flexibility TUBC both gender were better than UOSP. However, the numerical information disclosed TUBC both gender students obesity and flexibility status were recovering than UOSP students. The null hypothesis rejected expressively $p < 0.05$ significantly except male obesity ratio.

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Table 1. Comparison of Mean, std. deviation of TUBC and UOSP students height and weight

Variable	TUBC	UOSP	TUBC	UOSP
Gender	Male =150		Female =150	
Age 18-23	M ± SD	M ± SD	M ± SD	M ± SD
Weight (kg)	72.05 ± 13.15	65.24 ± 11.13	57.47± 9.54	55.45± 12.02
Height (cm)	174.01 ± 6.33	167.74 ± 9.76	164.29 ±7.19	157.38± 8.88

Table 2. Comparison of Mean, SD, t- value, 95% CI p, r value of BMI of TUBC and UOSP both gender students

Variable	TUBC	UOSP	t-value	95%CI	P- value				
Age: 18 -23									
Bod Mass Index	M v/s M	150	22.63	2.99	23.3	4.15	-1.64	-1.50-0.15	0.108
	F v/s F	150	21.22	2.80	22.22	3.41	-2.79	-1.71- -0.30	0.006**
**Correlation Male >0.05 and female is significant at the 0.01 level (2-tailed).									
Flexibility test	M v/s M	150	9.60	5.95	9.14	8.61	0.54	-1.20-2.14	0.00**
SRT	F v/s F	150	11.05	5.84	10.87	4.32	0.30	-0.99-1.34	0.00**
**Correlation is significant at the 0.001 level (2-tailed).									

Fig. 1. Percentage comparison of BMI of Both University Students

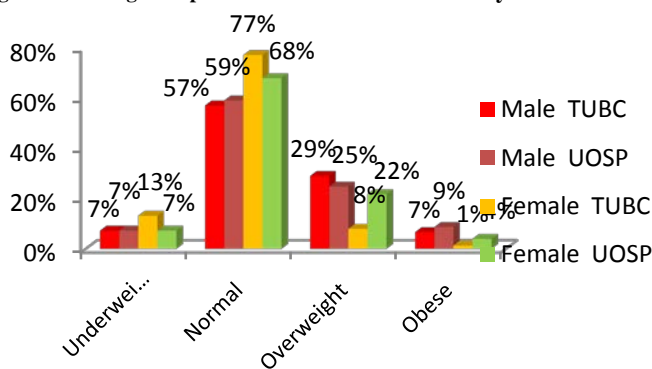
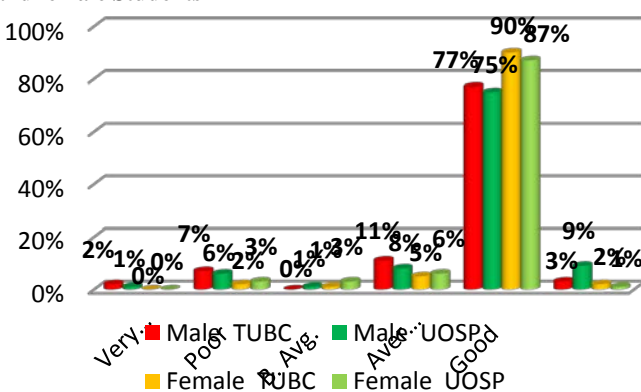


Fig. 2. Percentage comparison of SRT of Both University Male and female Students



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