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Flexibility in Punjabi girls: An observational study

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Abstract

Flexibility can be defined as the range of motion (ROM), or movement around a single joint or set of joints. Flexibility is an important component among these for assessing an individual fitness level. Tightness in muscles interferes with normal functioning and may further limit ROM. The present study is an observational study, for evaluating the flexibility among girls. A total of sixty girls were recruited. An inclusion criterion was set for selecting the subjects into the study: 1) Only females subjects were recruited. 2) Age range was 20-25 years. 3) Only non-athlete were recruited in the study. 4) Written signed informed consent was taken from all the subjects. Those subjects who were not co-operative and not willing to participate in the study were excluded. The anthropometric measurement were calculated which includes weight and height. The outcome measure, flexibility was measured by sit and reach box. The results from the present study suggested that, the mean age and standard deviation of sixty non-athlete Punjabi girls was 23.53 ± 1.11 . The mean weight and height with standard deviation was 55.08 ± 6.73 and 161.146 ± 6.35 respectively. Also, the mean and standard deviation of flexibility was calculated which was 9.30 ± 4.70 . The study concluded that there was an average level of flexibility among non-athlete Punjabi girls.

Keywords: Anthropometric measurement, flexometer, non-athletes, sit and reach test

Introduction

Flexibility is the range of motion (ROM) or movement around a single joint or set of joints [1]. Flexibility is the area of sports concern which every athlete, sports physician, therapist, trainer and scientist has an opinion. Flexibility can be broadly classified as static and dynamic. Static flexibility is the ROM available to a joint or series of joints. Whereas, dynamic flexibility is related to the ease of movement within the obtainable ROM [2]. The flexibility is effective in providing an optimal development, which is a needs of overall physical fitness, along with other physical factors such as the speed, strength, power and agility [3].

Tightness in muscles interferes with normal functioning and may further limit ROM [4]. Lack of flexibility can be a major contributing factor to muscle and joint pain. If the muscles cannot contract and relax efficiently, it results in a decline in performance. Short, tight muscles can also cause a loss of strength and power during physical activity [5].

Blood circulation plays an important role in ensuring the adequate amount of oxygen and nutrients is supplied to muscle and muscle groups. Rarely, tightness in muscles can also be responsible for reduced blood circulation. This poor blood circulation might results in muscle fatigue and thus reduces the ability to recover from strenuous exercise and muscle repair process is impeded [6]. Thus, slowly all these factors reduce the flexibility in muscles and muscle groups and lead the muscle to such a discomfort level that it affects the overall performance of individual. It also increases the risk of other soft tissue injury [7].

There are various factors which contribute to decrease in flexibility. Flexibility, or range of motion, can be restricted by both internal and external factors. Internal factors such as bones, ligaments, muscle bulk, muscle length, tendons and skin restricts the amount of movement at any particular joint [7, 8]. External factors such as age, gender, temperature, restrictive clothing and of course any injury or disability will also have an effect on ones flexibility [9, 10].

Aging is a continuous process which leads ultimately to physical degeneration of soft tissues and bone matrix. This further speeds up with in inactivity. Although we cannot halt the aging process completely, this should not mean giving up on trying to improve flexibility and fitness [11].

As far as gender differences, females have higher flexibility compare to males [12]. Also, females are typically described as having hourglass, pear, apple or ruler body shapes. Stretching is the most effective way of developing and maintaining flexibility in muscles and joint. It is commonly used in sports for improving the performance and overall physical fitness [13]. A study investigated by Mikkelsen *et al* 2006, evaluated adolescent flexibility, endurance strength, and physical activity. The study concluded that overall good flexibility in boys and good endurance strength in girls may contribute to a decreased risk of tension neck. High endurance strength in boys may indicate an increased risk of knee injury [14]. There are several studies done which have determine the physical fitness components on athletes, but very few studies evaluated the flexibility among non-athlete Punjabi girls [5, 15].

Materials and methods

The present study is an observational study, for evaluating the flexibility among girls. A total of sixty girls were recruited by random sampling, from Ambedkar girl's hostel of Punjabi University, Patiala. An inclusion criterion was set for selecting the subjects into the study: 1) Only females subjects were recruited. 2) Age range was 20-25 years. 3) Only non-athlete punjabi females were recruited in the study. 4) Written signed informed consent was taken from all the subjects. Those subjects who were not co-operative and not willing to participate in the study were excluded. The outcome measure of the present study was flexibility.

Procedure

The anthropometric measurement were calculated which includes weight and height. The flexibility was measured by sit and reach box.

1. Body weight measurement

Body weight is the total weight of the body when the bowels are empty.

Technique: Body weight was taken on weighing machine when subject was asked to stand still in the center of platform with equal pressure on both the feet. The pointer was adjusted at zero before requesting the subject to stand on the platform and reading was noted.

2. Height Measurement

It is the vertical distance from vertex to the plane horizontal floor.

Landmark Involved Vertex: It is the superior most point in the skull in the mid sagittal plane when head is held in frankfort horizontal plane.

Technique: The subjects were asked to stand erect on a horizontal surface against a wall. The subject was asked to stretch his body as much as possible, taking care that his heels should touch each other and the wall. Slight upward pressure was applied below the master process in order to help in stretching to the fullest. The head was held in Frankfort horizontal. The rod was held vertically and horizontal arm was brought down so that it touches the height on the held in the mid sagittal plane subject.

3. Flexibility measurement

Flexibility in all subjects were measured by sit and reach test box

Technique: This test involves sitting on the floor with legs stretched out straight ahead. Shoes should be removed. The soles of the feet are placed flat against the box. Both knees should be locked and pressed flat to the floor the tester may assist by holding them down. With the palms facing downwards, and the hands on top of each other or side by side, the subject reaches forward along the measuring line as far as possible. Ensure that the hands remain at the same level, not one reaching further forward than the other. After some practice reaches, the subjects' reaches out and hold that position for one two seconds while the distance is recorded. Make sure there are no jerky movements.

4. Body Mass Index (BMI)

Body mass index is ratio of weight in kg/height in meter square.

Results and discussion

The data were analyzed using statistical Package for the Social Sciences (SPSS) version 16, by calculating mean and standard deviation. The demographic characteristics including age, weight, height and BMI of sixty non-athlete Punjabi girls were calculated by mean \pm standard deviation. The flexibility, which is the outcome measure in the present study, was analyzed for which mean and standard deviation was calculated (Table 1). Figure 1 and 2 shows the graphical presentation in terms of mean and standard deviation of weight and flexibility among non-athlete Punjabi girls respectively.

Table 1: Showing average mean and standard deviation of Demographic characteristics and flexibility among non-athlete Punjabi girls.

Demographic Characteristics		
Measurement	Average Mean	\pm Standard Deviation
Age (in years)	23.53	1.11
Weight (in kilograms)	55.08	6.73
Height (in centimeters)	161.46	6.35
BMI (Kg/m ²)	21.80	3.74
Outcome Measurement		
Flexibility (inches)	9.30	4.70

Figure 1 and 2 showing average mean and standard deviation of weight and flexibility among non-athlete Punjab girls respectively.

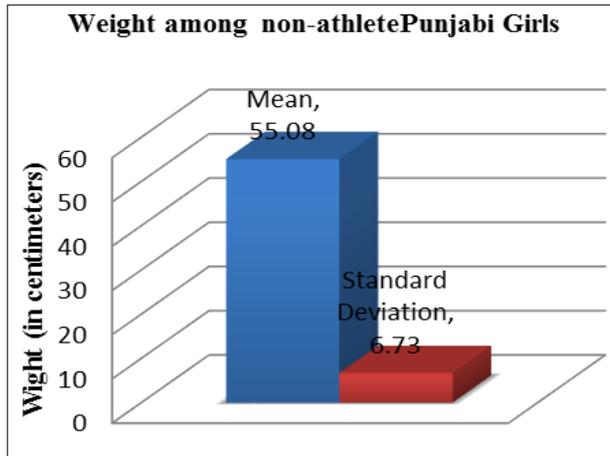


Fig 1

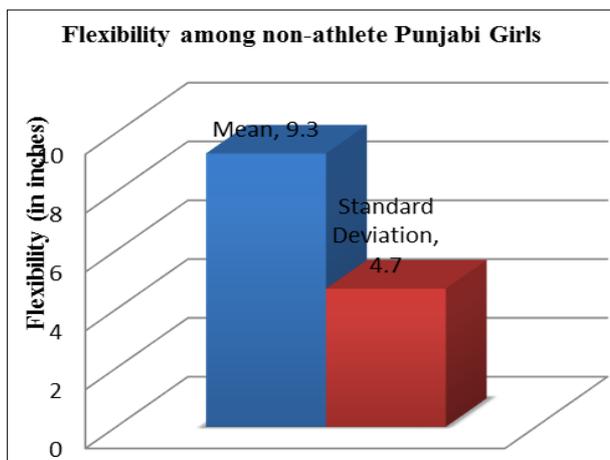


Fig 2

The present study was conducted to determine the flexibility in non-athlete Punjabi girls. The results from the present study suggested that, the mean age and standard deviation of sixty non-athlete Punjabi girls was 23.53 ± 1.11 . The mean weight and height with standard deviation was 55.08 ± 6.73 and 161.146 ± 6.35 respectively. Also, the mean and standard deviation of flexibility was calculated which was 9.30 ± 4.70 . According to Indian Council of Medical Research Norms, the girls in the present study possess 5 kilograms more weight than the standard weight for this age group. The calculated BMI of sixty non-athlete Punjabi girls was categorized in normal zone. According, to American College of sports medicine 2009, the flexibility for the age group in the present study is less and needs improvement [16]. There, the flexibility of these girls lies in an average group. This might be due to the more weight of these non-athlete girls. This shows that there is reduced flexibility among non-athlete girls. This may be due to the lack of physical activity and sedentary lifestyle. Since, this is not a good sign; they must workout to increase the flexibility level from average to good. This will help them to keep fit with the advancing age.

The result of the present study is similar to the study conducted by Malina *et al*, 1995. They investigated the association between fatness and fitness of girls 7 to 17 years of age: first, age-specific correlations between fatness and measures of health-related and motor fitness, and second, comparisons of fitness levels of girls classified as fat and lean.

The result shows that the fattest girls have generally poorer levels of health-related and motor fitness [17].

Kumar *et al* in 2012 compared the flexibility between jat sikh and bania girls. Flexibility of 134 healthy Punjabi school girls with age group 7-18 years was evaluated. The results suggested that jat sikh girls are more flexible than bania girls [18]. A study conducted by Al-Asiri *et al* in 2015, showed similar findings. The purpose of the study to find out the correlation between BMI and health related physical fitness. The results revealed that higher BMI were generally associated with lower Health related physical fitness (HRPF). The level of HRPF may serve as an indicator of potential health risks those overweight and obese children girls and adolescents faced [19].

Since, the flexibility is the integral component of fitness; therefore its important goal is preventing and reducing injuries. Also, an appropriate level of warm-up before flexibility training helps in enhancing and maintaining overall performance.

Conclusion

The present study concluded that there was an average level of flexibility among non-athlete Punjabi girls. Therefore, these girls need to improve their flexibility level at least to a good level.

References

1. Mendes B, Eercin T, Uzun K. Examination of flexibility and sprint performance values of adolescent footballers. Turkish Journal of Sport and Exercise. 2015; 17(3):16-20.
2. Gleim GW, Mc Hugh MP. Flexibility and its effects on sports Injury and performance. Sports Medicine 1997; 24(5):289-90.
3. Yadav M, Rohilla K. A comparative study of physical fitness among sportsmen and non- sportsmen students in Bhiwani district of Haryana. International Journal of Multidisciplinary Research and Development. 2014; 1(5):177-8
4. Khalili A, Bakhtiary AH. Two Methods for Improvement of Short Hamstrings in Healthy Individuals Mohammad. Middle East J Rehabil Health. 2014; 1(2):1-5.
5. Shivalingaiah J, Vernekar SS, Naik AS, Gowdar SS. Effect of training on agility, flexibility, its correlation, and also its correlation with skin fold thickness and body mass index among runners. National Journal of Physiology, pharmacy and pharmacology. 2016; 6(6):505-9.
6. Fatima G, Qamar MM, Ul Hassan J, Basharat A. Extended sitting can cause hamstring tightness. Saudi Journal of Sports Medicine 2017; 17(2):110-4.
7. Fenech P, Mc Guigan P, Wilson C. The effect of Kinesio Tape on strength, flexibility and proprioception in hamstrings muscles. 2015, 1-17.
8. Lekinwala N, Kumar P, Aranha VP, Samuel AJ. Effect of mobilization technique on hamstring flexibility among young health adults – an experimental comparative study. Revista Pesquisa em Fisioterapia. 2015; 5(3):184-90.
9. Fasen JM, Connor AM, Schwartz S. A randomized controlled trial of hamstring stretching: comparison of four techniques. Journal of strength and conditioning research. 2009; 23(2):660-7.
10. Mistry GS, Vyas NJ, Sheth MS. Comparison of hamstrings flexibility in subjects with chronic low back pain versus normal individuals. Journal of Clinical and

- Experimental Research. 2014; 2(1):85-8.
11. Varangaonkar VC, Ganesan S, Kumar KV. The relationship between Lumbar range of motion with hamstring flexibility among 6- 12 years children from South India: A cross-sectional study. *International Journal of Health & Allied Sciences*. 2015; 4(1):23-7.
 12. Bakhtiari AH, Khalili MA. Two Methods for Improvement of Short Hamstrings in Healthy Individuals. *Eastern Journal of Rehabilitation and Health*. 2014; 1(2):1-5.
 13. Abbas DM, Sultana B. Efficacy of Active stretching in Improving the Hamstrng Flexibility *International Journal of Physiotherapy and Research*. 2014; 2(5):725-32.
 14. Mikkelsen LO, Nupponen H, Kaprio J, Kautiainen H, Mikkelsen M, Kujala UM. Adolescent flexibility, endurance strength, and physical activity as predictors of adult tension neck, low back pain, and knee injury: a 25 year follow up study. *British Journal of Sports Medicine*. 2006; 40:107-113.
 15. Raut TS. Relationship between skill performance and selected motor fitness variables of tribal female handball players. *Indian Stream Research Journals*. 2012; 2(7):1-4.
 16. Thompson WR, Gordon NF, Percatello LS. *American College of Sports Medicine*, 8th Edition, 2009, 100.
 17. Malina RM, Beunen GP, Cluessens AL, Lefevre J, Eynde BV, Renson R. Fatness and Physical Fitness of Girls 7 to 17 Years. *Obesity A Reseach Journal*. 1995; 3(3):221-31.
 18. Kumar A, Lehri A, Monica. Comparison of Flexibility between Jat Sikh and Bania girls. *Int. J. Sports Sc. P.Ed* 2012; 21:19-27.
 19. Al-Asiri ZA, Shaheen AAM. Body Mass Index and Health Related Physical Fitness in Saudi Girls and Adolescents Aged 8 - 15 Years. *Open Journal of Therapy and Rehabilitation*. 2015; 3:116-125.