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A cross-sectional study on percentage of body fat kayaking university players

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Abstract

The purpose of this study was to compare Body Fat of Guru Nanak Dev University, Amritsar, Panjab University, Chandigarh, Punjabi University, Patiala, and Kurukshetra University, Kurukshetra male Inter-University Kayaking Players. To obtain data, the investigators had selected Forty Eight (N = 48) male Kayaking Player of 18 to 25 years (Mean \pm SD: Age: 19.761 \pm 2.488 years; Body Mass: 1.749 \pm 7.046 kilograms; Body Height: 65.047 \pm 9.286 meters) of age to act as subjects. Statistical Package for the Social Sciences (SPSS) was used for all analyses. The differences in the mean of each group for selected variable were tested for the significance of difference by One-way Analysis of Variance (ANOVA). For testing the hypotheses, the level of significance was set at 0.05.

Keywords: Body fat, kayaking

Introduction

Every sport have their specific anthropometric and physical characteristics ^[1, 2, 3]. Study of their characters become popular now a days to determine the athlete profile ^[2, 4, 5]. In male kayaking and canoeing, events of optimal performance are seemed to be related with certain physical and morphological attributes ^[6]. Studies shows successful paddlers with heavy and taller somatotypes, superior upper body girth and lower skinfolds value ^[1, 5, 3]. Kayaking and canoeing both are technical sports. Kayaking is more physically demanding sport among all endurance sports ^[7]. There are different kind of kayaking races, like; single seat, double seated, fourseat kayak ^[8]. The kayak boat is a covered-deck boat consisting a cockpit where the competitor sits by facing forward. A double bladed paddles is used in kayaking ^[9]. The somatic type of a competitor is determined by specific physiological requirements. This helps the coaches for the selection procedure of kayaks. Anthropometric characteristics along with other factors like; physical fitness, psychological and physiological factors, specific skills has a very significant role in successful performance of sport ^[10]. Various studies identified the relation of physique and performance ^[11, 12, 13, 14, 15]. Elite level athletes from different sports have different body characteristics. Kinanthropometry study describes analysis of human body size, shape, proportion, composition, and gross motor function. These factors help to understand the growth, exercise performance, and maturation in sportsman ^[1].

2. Material and Method

2.1 Selection of Subjects

Forty Eight (N=48), male Guru Nanak Dev University, Amritsar, Panjab University, Chandigarh, Punjabi University, Patiala, and Kurukshetra University, Kurukshetra Inter-University players 12 of Kayaking between the age group of 18-25 years were recruited as subjects. The objective and protocol was explained to the subjects and their verbal consent to participate in the study was taken. Distribution and demographics of subjects are brought forth in the total of 48 male Kayaking players were selected having age ranging from; 18-25 years (Mean \pm SD: 22.52 \pm 1.75 Age years, 172.64 \pm 4.88 Body Height centimetres, 72.56 \pm 3.15 Body Mass kilograms) were selected. The participants were selected from 4 universities, 12 subjects each.

Table 1: Shows describe the distribution of demographic data of subjects of all 4 universities.

Variables	Total (n=48)	Guru Nanak Dev University, Amritsar (n ₁ =12)	Panjab University, Chandigarh (n ₂ =12)	Punjabi University, Patiala (n ₃ =12)	Kurukshetra University, Kurukshetra (n ₄ =12)
Age	22.52 ± 1.75	22.16 ± 1.94	22.58 ± 1.88	22.58 ± 1.56	22.33 ± 1.55
Height	172.64 ± 4.88	175.16 ± 6.57	172.08 ± 4.14	171.91 ± 3.72	171.58 ± 3.77
Weight	72.56 ± 3.15	72.83 ± 3.24	72.30 ± 2.72	72.64 ± 3.27	72.55 ± 3.48

N; sample size, yrs; years, cm; centimeters, kg; kilograms.

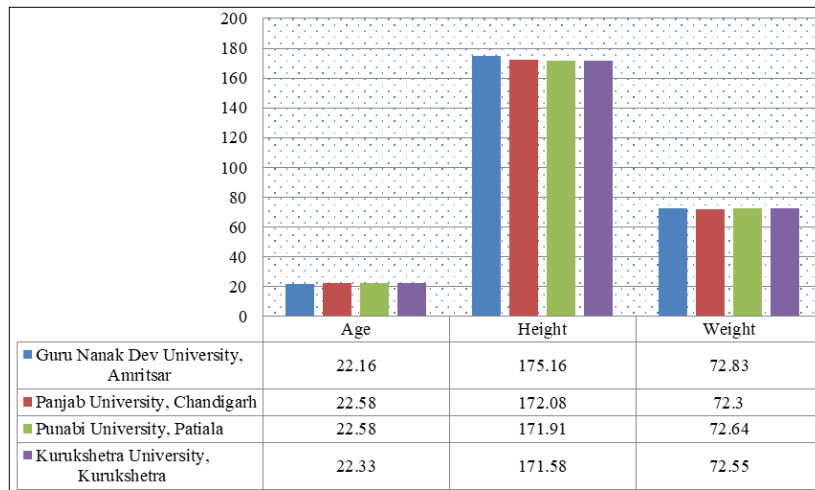


Fig 1: Distribution and demographics of subjects

3. Statistical Procedure

The Statistical Package for the Social Sciences (SPSS) was used for all analyses. The differences in the mean of each group for selected variable were tested for the significance of difference by One-way Analysis of Variance (ANOVA). For

testing the hypotheses, the level of significance was set at 0.05.

4. Results

Table 2: One Way Analysis of Variance (ANOVA) results among Inter-University Kayaking Players with Regard to % Body Fat (Body Composition).

Source of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-Value	P-Value (Sig.)
Between Groups	600.666	3	200.222	7.85*	.000
Within Groups	1121.656	44	25.492		
Total	1722.322	47			

The p-value is .0000. The result is significant at $p < .05$.

It can be seen from Table 2 that significant differences were found with regard to the Cardiovascular Fitness of Kayaking male Inter-University Players (i.e., Guru Nanak Dev University, Amritsar, Panjab University, Chandigarh and Punjabi University, Patiala and Kurukshetra University,

Kurukshetra as the P value (Sig.) .000 was found lower than the 0.05 level of significance ($p > 0.05$). Since F value was found significant, therefore, there is need to apply Post-hoc test. The result of Post-hoc test has been presented in Table.

Table 3: Analysis of least significant difference post-hoc test among Inter-University Kayaking Players with Regard to % Body Fat (Body Composition).

	Means	Mean Difference	P-value (Sig.)
Guru Nanak Dev University, Amritsar (33.18)	Panjab University, Chandigarh (32.29)	.8916	.007
	Punjabi University, Patiala (32.47)	.8916	.667
	Kurukshetra University, Kurukshetra (24.52)	.7141	.731
Panjab University, Chandigarh (32.29)	Guru Nanak Dev University, Amritsar (33.18)	8.668*	.000
	Punjabi University, Patiala (32.47)	-.8916	.667
	Kurukshetra University, Kurukshetra (24.52)	-.1775	.932
Punjabi University, Patiala (32.47)	Panjab University, Chandigarh (32.29)	7.776*	.000
	Kurukshetra University, Kurukshetra (24.52)	-.7141	.731
	Guru Nanak Dev University, Amritsar (33.18)	.1775	.932
Kurukshetra University, Kurukshetra (24.52)	Guru Nanak Dev University, Amritsar (33.18)	7.954*	.000
	Panjab University, Chandigarh (32.29)	-8.668*	.000
	Punjabi University, Patiala (32.47)	-7.776*	.000

• A glance at table 2 showed that the mean value of Guru Nanak Dev University, Amritsar was 33.18 whereas Panjab University, Chandigarh had mean value as 32.29

and the mean difference between both the groups was found 8.668*. The p-value sig .000 shows that the Guru Nanak Dev University, Amritsar had demonstrated

significantly better on % Body Fat than their counterpart's Panjab University, Chandigarh.

- The mean value of Guru Nanak Dev University, Amritsar was 33.18 whereas Punjabi University, Patiala had mean value as 32.47 and the mean difference between both the groups was found .1775. The p-value sig .932 shows that the Guru Nanak Dev University, Amritsar had demonstrated significantly better on % Body Fat than their counterpart's Punjabi University, Patiala.
- The mean value of Guru Nanak Dev University, Amritsar was 33.18 whereas Kurukshetra University, Kurukshetra had mean value as 24.52 and the mean difference between both the groups was found 7.954*. The p-value sig .000 shows that the Guru Nanak Dev University, Amritsar had demonstrated significantly better on % Body Fat than their counterpart's Kurukshetra University, Kurukshetra.
- The mean value of Panjab University, Chandigarh was 32.29 whereas Punjabi University, Patiala had mean value as 32.47 and the mean difference between both the

groups was found 7.776*. The p-value sig .000 shows that the Punjabi University, Patiala had demonstrated significantly better on % Body Fat than their counterpart's Panjab University, Chandigarh.

- The mean value of Panjab University, Chandigarh was 32.29 whereas Kurukshetra University, Kurukshetra had mean value as 24.52 and the mean difference between both the groups was found -8.668*. The p-value sig .000 shows that the Panjab University, Chandigarh had demonstrated significantly better on % Body Fat than their counterpart's Kurukshetra University, Kurukshetra.
- The mean value of Punjabi University, Patiala was 32.47 whereas Kurukshetra University, Kurukshetra had mean value as 24.52 and the mean difference between both the groups was found -.7141*. The p-value sig .731 shows that the Punjabi University, Patiala had demonstrated significantly better on % Body Fat than their counterpart's Kurukshetra University, Kurukshetra.

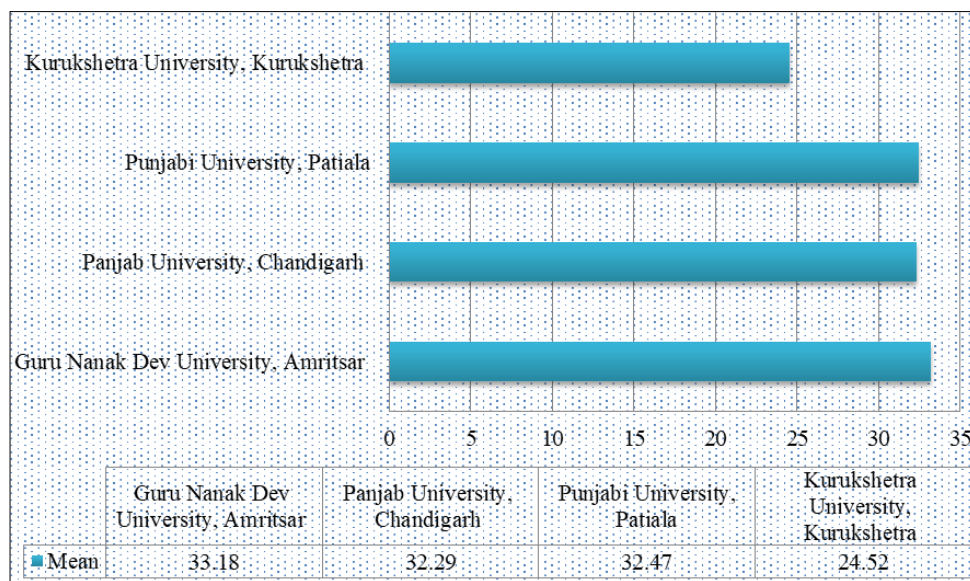


Fig 2: Graphical representation of mean scores with regard to male Inter-University Kayaking Players with Regard to % Body Fat (Body Composition)

5. Discussion

The purpose of present study was to compare the physical health component of university level Kayaking players. Present study reported that there is no observed difference in body fat between the two disciplines.

Previous study suggested that adiposity level of players has significant effect in the total weight of boat. This directly affects the submerged area of boat. Increase in friction due to weight cause a significant decreases in boat's speed (Alacid *et al.*, 2011; Jackson, 1995).

In the current study, both disciplines presented no significant differences in the percentage of body fat. There is less literature of comparison between both disciplines is available, more focus by researchers is done on paddling level and gender difference (Sidney and Shephard, 1973; Fry and Morton, 1991). Earlier studies on youth kayakers reported lower values of body fat (Arlettaz *et al.*, 2004; Cuesta *et al.*, 1991; Gobbo *et al.*, 2002; Sidney and Shephard, 1973).

Fry and Morton (1991) found a negative relationship between body fat and performance. they reported that greater fat mass is associated with poor performance in 1,000 m and 500 m events. Conversely, van Someren and Palmer (2003) reported greater adiposity in elite young. Many studies shows the

evidences that age and nature are important determinants of adiposity (Fry and Morton, 1991; Sidney and Shephard, 1973; van Someren and Palmer, 2003).

However, it should be kept in mind that different studies have their different methods and parameters of estimation. Slaughter *et al.* (1988) method of estimating body fat was accepted the most (Mendez-Villanueva *et al.*, 2011).

6. Conclusions

The present study compared the Physical Health level among the Kayaking players of university level. We observed no difference in body fat of Physical Health among the Kayaking players of university level.

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