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Bhupinder Singh

M.Phil. Scholar Department of
Physical Education Punjabi
University Patiala, Punjab,
India

Dr. Nishan Singh Deol

Professor & Head, Department
of Physical Education, Punjabi
University Patiala, Punjab India

Comparative study of bone mineral density between sportspersons and non-sportspersons

Bhupinder Singh and Dr. Nishan Singh Deol

Abstract

The purpose of the present study was to compare the selected bone mineral density between sportspersons and non-sportspersons. Total 60 male subjects (sportspersons: 30 and non-sportspersons: 30) age group of 28 to 30 years, were randomly selected from Punjabi university Patiala. All the subjects, after having been informed about the objectives and protocol of the study, gave their consent and volunteered to participate in this study. The level of significance was set at 0.05. The physiological variable was bone mineral density. The findings shows mean score of the Bone Mineral Density among Sportspersons and Non-Sportspersons was 129.3333 and 106.6333 respectively. The calculated t-value (6.476) which is more than the tabulated t-value (1.671) at 0.05 level. So, it demonstrates that there is a significant difference between Sportspersons and Non-Sportspersons for their Bone Mineral Density. This might be due to the high level of training of payers.

Keywords: Bone mineral density, sportspersons, non-sportspersons etc.

Introduction

The human bone has made mainly of collagen; this is living and growing tissue also. Collagen is a kind of protein that provides a soft frame, and calcium phosphate is a mineral that adds strength and hardens the structure. The mixture of collagen and calcium makes bone powerful and flexible enough to endure stress. Further than 99 percent of the body's calcium is included in the teeth and bones. The left over 1 percent is located in the blood.

Bone density, or Bone Mineral Density (BMD), is the amount of bone mineral in bone tissue. The concept is of mass of mineral per volume of bone (relating to density in the physics sense), although clinically it is measured by proxy according to optical density per square centimetre of bone surface upon imaging. Bone density measurement is used in clinical medicine as an indirect indicator of osteoporosis and fracture risk. It is measured by a procedure called densitometry, often performed in the radiology or nuclear medicine departments of hospitals or clinics. The measurement is painless and non-invasive and involves low radiation exposure. Measurements are most commonly made over the lumbar spine and over the upper part of the hip. The forearm may be scanned if the hip and lumbar spine are not accessible.

There is a statistical association between poor bone density and higher probability of fracture. Fractures of the legs and pelvis due to falls are a significant public health problem, especially in elderly women, leading to much medical cost, inability to live independently and even risk of death. Bone density measurements are used to screen people for osteoporosis risk and to identify those who might benefit from measures to improve bone strength. US National Library of Medicine Medical Subject Headings (MeSH)

Bone mineral density is a medical term referring to the amount of matter per square centimetre of bones (g/cm^2). Bone density is used in clinical medicine as an indirect indicator of osteoporosis and fracture risk. (Bone Density at the US National Library of Medicine, 2011)

Material and Method

In present study total sample were comprised of sixty (30 Sportspersons + 30 Non-Sportspersons) subjects. Sixty males were selected from Punjabi University, Patiala (Punjab).

Correspondence

Bhupinder Singh

M.Phil. Scholar Department of
Physical Education Punjabi
University Patiala, Punjab,
India

Study was conducted on thirty sportspersons and thirty non-sportspersons. Sportspersons were those subjects who participated in at least 'Interuniversity or senior national' and non-sportspersons were those subjects who did not participated in any completion level. The age of subjects were ranged between 28-30 years. All subjects were selected by purposive sampling technique.

Selection of Variables

Bone Mineral Density between Sportspersons and Non-Sportspersons.

Methodology

Bone Mineral Density was measured with the help of Sonost-3000. The unit of measurement for BMD is g/cm².

Criterion Measures: Sonost-3000 machine test is applied to measure bone mineral density.

Purpose: To determine bone mineral density of the subjects.

Equipment: Sonost-3000

Procedure: The tester gave instructions in advance to the subject and after that subject was asked to sit on a chair. Name, Sex, Age and Sequence no. of the subject was filled in the machine and then subject was asked to remove his shoes and put his left foot on the mentioned place on machine for 15

seconds. All the measurement were with the help of lab technician.

Score: After the automatic calculation, machine printed out a paper and score was written on that slip.

Statistical Analysis

With regard to purpose of the study, unpaired t-test was calculated for selected variables between sportspersons and non-sportspersons. The level of significance was set at 0.05 level.

Results

Table 1: The Difference between Bone Mineral Density between Sportspersons and Non-Sportspersons

Group	N	Mean	SD	t-value
Sportspersons	30	129.3333	12.96769	6.476*
Non-Sportspersons	30	106.6333	14.15794	

*Significant at 0.05 level, Tabulated value at DF 58 = 1.671

Table 1 shows the Mean and SD values with regard to Sportspersons is 129.3333 ± 12.96769 whereas in the case of Non-Sportspersons is 106.6333 ± 14.15794 respectively. The calculated t-value (6.476) which is more than the tabulated t-value (1.671) at .05 level. So, it demonstrates that there is a significant difference between Sportspersons and Non-Sportspersons for their Bone Mineral Density.

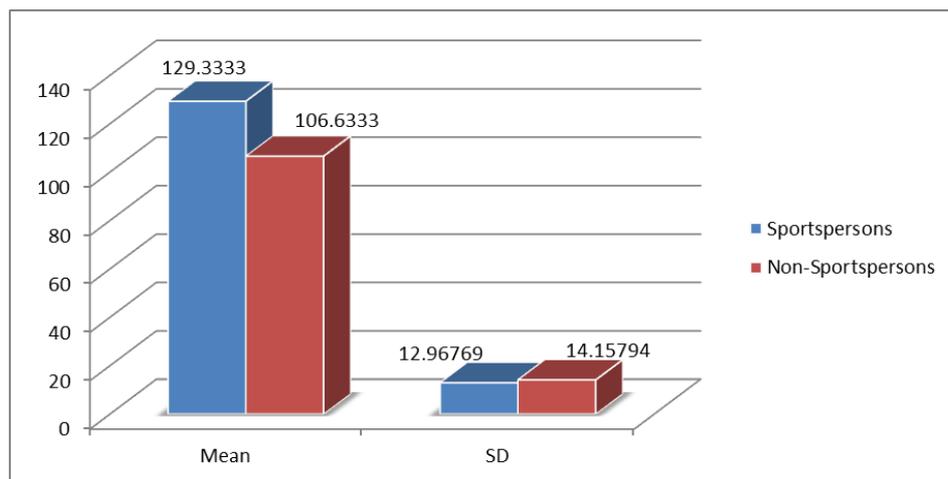


Fig 1: The Difference between Bone Mineral Density between Sportspersons and Non-Sportspersons

Discussion

The findings shows mean score of the Bone Mineral Density among Sportspersons and Non-Sportspersons was 129.3333 and 106.6333 respectively. There was significant difference found in Bone Mineral Density. It may be probably due to the reason that, Sportspersons body functions works more efficiently due to their involvement in various training programs for the preparation of competitions. The another reason may be that Non-Sportspersons do not participate in rigorous activities that's why their body functions do not perform functions more efficiently in comparison to Sportspersons.

Conclusion

After defining the limitations of the present study describe Bone Mineral Density: Bone Mineral Density varies significantly between Sportspersons and Non-Sportspersons. The Sportspersons had significantly greater Bone Mineral

Density than Non-Sportspersons. It is suggested that the present study can be conducted on large number of subjects of different states between Sportsperson and Non-Sportsperson. Similar study can be conducted on Female Sportspersons and Non-Sportspersons.

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