

Research Summary

The Influence of the quality of flooring and the nature of sport activity on the anatomy of the foot bones

Introduction and research problem:

Athletic performance is a dynamic expression of the characteristics of the human body, there is no doubt that the differences in the shapes of bodies have a great relationship with the efficiency of its responses to what aspects it takes of the sports activity, therefore the presence of any changes in the anatomy of the body alters its mechanics when performing different skills, and leads to dispersion of forces in side paths which doesn't serve the same skill. The foot is considered a main component of general fitness and it is of a great importance in human life, whether athletes or normal individuals. Whereas the foot is a loading organ in the body doing its function through loading and contact with the ground so we find that the nature and quality of flooring may play a significant role in influencing the anatomy the foot bones if there is no proper consideration in the technique in landing on the feet especially on hardwood floors Solid land or land with low flexibility.this doesn't help to absorb the weight and strength of the sport athlete during practice, which is a cause for injury. Other than that, in terms of the effect of the nature of sports activity exerted on the anatomy of the foot bones there is no doubt that physical activity has a significant advantage on the individual, but because each activity has its special nature which is differ from other sporting activities there may be a negative impact especially on foot when practicing sports activities that are filled with movements which are considered a big load. we find that each activity has its own sharp chronic negative or positive impact on anatomical bases of foot with different rates which vary depending on the type and nature of activity practiced, some sports activities practiced without wearing shoes and others require a special performance to drop from great heights on solid ground or characterized by particular muscular work in the feet for long periods, which affect the individual and have a negative impact on the anatomy of the foot bones.

*** The aim of the research:**

- 1.To Identify the impact of the quality of flooring on the anatomy of the foot bones for both karate players practicing on the tiles and karate players practicing on the rug.
 2. To identify the impact of the nature of sports activity exerted on the anatomy of the foot bones for both handball players and volleyball players.
- Measures: -

*** Research Methodology:**

Researcher followed the descriptive method using the survey method due to its suitability to the nature of the study.

*** Areas of research:**

Place Scope /

- Basic and exploratory Surveys were conducted in each of these Clubs (Sporting Club - Smouha Club – Al-Ithad Club – Al-Nehas Club), and these hospitals (Dar alchefaa specialized Sidi Gaber El Sheikh hospital - Sidi Gaber specialized hospital – Noor al Islam hospital – El-Soyoof Scan hospital – El-Saraya hospital) in Alexandria governorate.

Time Scope /

The study has taken nearly two years and four months from 28/10/2009 to 27/02/2012.

Exploratory survey was conducted in the period from 28/10/2009 to 13/08/2010.

Basic study was conducted in the period from 6/12/2010 to 27/02/2012.

Human Scope /

The research community represents a group of practitioners of sports activity (first team players for Smouha Club Handball team, first team players for Sporting and Al-Ithad Club Volleyball team and Karate players for both Al-Nehas Club, the Arab Union Company, Al-Ithad and Smouha) and a non-

practicing physical activity students of the Faculty of Education, University of Alexandria.

*** Research Sample:**

Research sample was selected as follows:

A - practitioners of sports activity Sample and they were chosen randomly from (karate, handball, volleyball) players and their ages ranging between (20 to 25) years and the sample size reached to (44) player.
B - Non-practitioners of physical activity sample and they were chosen designedly to ensure they are free from deformities of flat feet and their ages ranging between (20 to 25) years and the sample size reached to (10) members.

By that, the total sample size reached to (54 individuals) and they were divided into three groups as follows: -

Group A / consists of (21 Karate players) divided into (11 player) practicing karate on the tiles and (10 players) practicing karate on the rug and representing (the impact of the quality of flooring on the anatomy of the foot bones).

Group B / consists of (23 players) divided into (10 players) practicing handball and (13 players) practicing volleyball, representing (the impact of the nature of the physical activity exerted on the anatomy of the foot bones)

Group C / consists of (10) members of the non-practitioners of sports activity to adjust the research results.

Terms of sampling:

1 - player's training age Must be at least (10) consecutive years and chronological age (20) years.

2 - Player is not subjected to any injury during practice which may affected the bones of the foot.

3 -Player must be registered at the Federation of the game player and continuing to exercise activity on a regular basis.

4 – Player must not to exercise for any other activity than recorded by him, whether this activity is individually or in a group.

5 - Approval of players, coaches and management of the club to make X-Rays to the players.

6 – To be available in the non-practicing sports sample activity the terms of chronological age and lack of exposure to injury affected the bones of the foot - and not suffering of deformation of the flat feet or any other foot deformities.

*** Data collection tools: -**

First: Anthrobometric Measurements /

- Weight measurement to the nearest (kg)
- Measure the height to the nearest (centimeter)

Second: anatomical measurements of the bones of the foot /

For anatomical measurements of the bones of the foot an X-ray imaging was taken for all members of the research samples the practitioners and non-practitioners of sports activity using X-rays in the lateral position of the feet where they are filming the left and right foot from the medial side of the foot

And the researcher made the following measurements: -

Angles

- Angle (1) rear angle of the triangle.
- Angle (2) top angle of the triangle.
- Angle (3) front-angle triangle.
- Angle (4) angle between the line equitable to Al-Kanzaacy bone and the front bending of the of the heel bone.
- Angle (5) the angle between the line equitable to Al-Kanzaacy bone and equitable line of heel.
- Angle (6) angle of heel inclination.
- Angle (7) the angle between the line equitable to Al-Kanzaacy bone and equitable line of the first metatarsal.

Heights

- The height of the nearest point to touch Al-Kanzaay bone.
- The height of the nearest point to touch the navicular bone.
- The height of the nearest point of touch the medial cuneiform bone.
- The height of the nearest point to touch the first prejudice comb.

Third: Hardware and tools used

- Bone Digital imaging device (Digital X-rays, digital).
- Transparent listed 30 cm ruler to measure heights and angles .
- Transparent protractor to measure foot angles.
- Scouts rays to determine foot bone measurements.
- Data collection form of the researcher design.

*** Basic study: -**

Basic study was conducted in the period from 6/12/2010 to 27/02/2012 on a research sample by time which is suitable with each individual member of the sample even if the scan individually done as to facilitate for the sample and not to force them with no appropriate time and that was done at EL- Saraya Hospital The study included the following: -

1 - Anthropometric Measurements /

The measure of height and weight on a research sample was conducted and filled out to the form specialized for each individual as well as each individual had to fill his own data.

2 – Conducting X-Ray/

X-rays were conducted to research sample of lateral position (medial view) for both feet (left and right) from the medial side and this is by the assistance of a CT specialist and professional technicians group assistants in the place and a report was taken on the status of each individual is accompanied by pornographic rays.

3 - Anatomical measurements of the bones of the foot /

After the completion of a scan on the research sample, the researcher conducted the anatomical measurements for the research at Al-Saraya

hospital due to the availability of radiation detectors that help to make these measurements in an accurate manner

*** Statistical processing: -**

The researcher used an appropriate statistical processing for the nature of the research, which is:

- The arithmetic mean.
- The standard deviation.
- Average grade level.
- Chi-squared differences.
- The value of Z.
- Testing the significance of differences t test.
- The ETA.

First: conclusions:

1. For floor tiles and carpet its negative impact on the anatomical structure of the bones of the foot (corners-Heights) at karate practitioners trained to tile and carpet, with most results statistically for non-practitioners of sports activity.
2. For floor tiles for their negative impact on the anatomical structure of the bones of the foot (corners – altitudes) than the carpet floors most of the results statistically for karate practitioners trained players on the rug.
3. Quality sports practitioner (handball-volleyball) negative effect on anatomical structure of the bones of the foot (corners-Heights) to the players with the most results statistically for non-practitioners of sports activity.
4. Practice volleyball has its negative impact on the anatomical structure of the bones of the foot (corners – altitudes) than the practice of handball, with most results statistically for handball players .

Secondly: recommendations:

1. Attention to quality of flooring which by their players and have the ability to absorb shocks in the activities carried out without wearing shoes as self-defence sports.

2. That qualifies trainers on how to incorporate preventive programmes (SCM) within the training plan for its importance in protecting players from the negative effects on the anatomical structure of the special foot bones at the international first class where there is excessive strain is the result of increasing the volume and intensity of training and competition.
3. As x-ray checks that must be made periodically on players with modern equipment for measuring the shape of the bones of the foot and changes such as your analysis of walking gait analysis system fdm-t wastanceand cente in clubs and research centres.
4. Further research and studies on anatomical measurements of the great machine to identify changes that can occur to the bone under the influence of the practice of different sports activities on different surfaces.

Abstract Search

The Influence of the quality of flooring and the nature of sports activity exerted on the anatomy of the foot bones

The research aims to identify the impact of the quality of flooring and the nature of sports activity exerted on the anatomy of the bones of the foot. Researcher followed the descriptive method using the survey method because of its relevance to the nature of the study. Selected sample of practitioners activity sports (sample test) were selected randomly from players (volleyball, handball, karate) and non-practitioners of sports activity (control sample) was selected in the manner intentional. The researcher has Bajrakiesat physical (height and weight) and anatomical (angle Triangle background (Calceneal angle), corner of the triangle top, corner of the triangle front., the angle between the line equitable bone Talus bending Alamamamy to Calceneas (Talu Calcenal angle), the angle between the line equitable bone Talus line and equitable after, angle of Calceneas (Calceneal pitch) and the angle between the line equitable bone Talus and equitable first Metatarsal and elevations which rise closer prejudice to the point of the bone Talus (Talar first metatarsal angle) , the nearest high point of the navicular bone prejudice, the nearest high point of the prejudice to the bone entocuneiform and the nearest high point of the prejudice to the first Metatarsal) The study found to influence the quality of flooring and the nature of sports activity exerted on the anatomy of the bones of the foot. The researcher recommends the application of this study at various sporting activities.



Alexandria University
Faculty of Physical Education For Girls
Department of Sports Health Sciences

**The Influence of the quality of flooring and the nature of
sports activity exerted on the anatomy of
the foot bones**

A thesis presented by

Shimaa Rezk Mohamed Rezk

A Demonstrator at Department of Health Sciences

Submitted in Partial Fulfillment of the Requirements for Master degree
in Physical Education

Supervisors

Prof.Dr /

Sanaa Fouad Amein

Professor at Department of Health
Sciences, Faculty Physical Education for
Girls, Alexandria University

Assi.Prof.Dr /

Madiha Awad EL Syed

Assistant Professor at Department of
Anatomy Medicine, Faculty of Medicine,
Alexandria University

1433 AH - 2013 AD