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A Therapeutic Program for the Flat Feet and its Impact to the Degree of Painin Middle School Students in Al-Qadisiyah Governorate

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Abstract

Scientific research is a basic pillar and sports medicine is considered one of the branches of science. One of the injuries is the injury of the flat feet and how to evaluate this deformity, which leads to the appearance of pain when practicing sports and according to the scientific measurements adopted by the researcher and using the foot scan to reach fruitful results and know the weaknesses to overcome the obstacles and difficulties facing the owners of flat feet. This research was supported by consultation with many medical specialists, as they stressed the existence of a correlation between flat feet and the degree of pain among practitioners of sports. This led the researcher to the importance of this problem and the need to develop a program based on this deformation and according to this work, the researcher reached the results, the more the comb of the foot moves away from the line of travel, the greater the angle between the longitudinal axis of the foot and the direction of walking, which led to increased pain in the injured. The larger the foot impression, the greater the degree of pain in the injured and the more there is an imbalance in the foot that led to the lack of distribution of strength between the metatarsals and the heel of the foot. Through the above research and its results, the researcher recommends the need to rely on these therapeutic exercises to repair this deformity because the sample is at the age of (13-15), that is, in the developmental stage.

Keywords: Program - the Flat Feet - Middle School Students.

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1-Introduction and importance of research:

Nations and peoples today are greatly concerned with human health and give it attention and care because human health is the first pillar in the construction and development of society and the measure of its progress. The use of modern devices is one of the necessities to detect the extent of weakness or defect in one or both feet, and the accompanying negative symptoms that affect the rest of the body. The healthy texture of the individual is of great importance for social health, and this research seeks to share other studies to reach the best ways to maintain the return of the body to its natural structure using therapeutic exercises that perform distortions .

There is no doubt that the foot is one of the important parts and is the pillar of the body's load. Therefore, the components of the foot should be bones, muscles, tendons, ligaments, joints, blood vessels and cartilage at their best to be able to perform the functions of the foot and smooth, especially since one of the most prominent deformities that affect the foot is the condition that disappears or almost disappears the curvature of the foot between the heel and the fingers, which makes the soles of the foot settle flat on the ground and achieves the articulation of the bones of the foot the ability to exercise various movements such as walking, running, jumping and others, because the important function of the arch of the foot is its ability to absorb shocks and prevent pressure on the blood vessels and the rest of the nerves, muscles and ligaments in the soles of the foot by distributing the pressure applied to the different parts of the foot.

The research ball was crystallized through the presence of sports-loving individuals who suffer from flat feet and the negative effects of this flat feet, some of which are psychological and the largest part is physical. The psychological state is concerned and unstable because of his feeling that this deformation reduces his athletic effectiveness and his ability to achieve the sport required by his age and is directly related to the strong will. As for the physical factor, it is another disability and essential. Therefore, the discovery of defects and defects in the internal surface of the foot gives the appropriate guidance to the individual to repair the psychological factor. When the student practices a certain effectiveness, he faces difficulties in achieving what leads to the stopping plateau of the student, which is the student's access to a certain extent after which he cannot raise his abilities and his ability to reach the higher levels, and achieve what he aspires to and also the state of head pain when exerting effort, which hinders the student and reduces his abilities and his ability to practice events and reach high levels. Hence, the importance of research that it is a study to rehabilitate deformations or defects in the internal surface of the foot and relieve the pain that accompanies the deformity suffered by the owners of the flat foot.

Research Problem:

Through the work of the researcher as a teacher and participant in sports activities and races, he noticed a problem related to the negative effects of flat footers on reaching to achieve victory because of the deformation in the foot, as they cannot reach what they wish to achieve good results or what they aspire to, because flatfoot affects the human body, which causes imbalance, head pain, neck pain, knee pain, low back pain, and the feeling of rapid fatigue as a result of the involvement of many muscles and the lack of distribution of pressure on the soles of the foot equally, which leads to the feeling of pain and the appearance of fatigue. Therefore, addressing the imbalance leads to overcoming obstacles and raising the level to achieve achievement, reduce pain and overcome the state of stopping and stagnation that affects the student.

Research objectives:

1-Identifying the flatness of the feet using a foot scan device among middle school students in Qadisiyah Governorate.

2-Preparing a rehabilitation program to treat flat feet among middle school students in Qadisiyah Governorate.

Research Hypotheses:

1-The treatment program led to the repair of the deformity in the feet .

2-The treatment program for flat feet reduced the degree of pain when exercising .

Research fields:

Human field: Students aged (13-15) years who suffer from flat feet or feet, the number of (13) individuals is medium for boys, medium for boys, medium for Al-Hassan for boys, medium for Al-Azhar Al-Sharif

Spatial scope: Sports Activity Hall in Diwaniya, Biomechanical Laboratory, Faculty of Physical Education, Qadisiyah University, Medium School for Boys.

Time Range: From 26/12/2023 to 11/6/2024.

2-Research Methodology and Field Procedures:

2-1 Research Methodology:

Use the one-group experimental approach to suit the nature of the research

2-2 Research Community and Sample:

Society means ((all the vocabulary of the phenomenon studied by the researcher, that is, all individuals, people or things that are the subject of the research problem) (Obeidat, 1988, p.105)

The research community was identified and they are the players at the ages of (13-15) years, their number was (16 individuals). The research sample was deliberately selected and they are the students who suffer from flat feet and feet and formed 92% of the original community. Two individuals were excluded because of their lack of commitment to the training units. Thus, the

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number of members of the sample that the researcher studied became (14) individuals , who suffer from (flat feet or feet). The sample was homogenized in terms of (height, weight, age, training age) as shown in Table (1):

Table (1)

#	Variables	Arithmetical mean (Maths)	Standard deviation (Maths)	Coefficient of variation
1	Height	149.8	13.47	572
2	Width	45.9	11.66	483
3	Age	13.5	.521	944

***If the value of the coefficient of difference is less than (30), it means that there is homogeneity in the sample (Hussein Mardan, 2006, 95)**

2-3 Devices, tools and means used in the research:

The researcher conducted several personal interviews with experts and specialists (Appendix (1)) in the field of medicine and mathematical physics. In light of these interviews, the researcher relied on identifying the idea of the research and its problem and choosing the variables related to the research. After that, a set of variables nominated by the researcher were selected for adoption as variables by experts according to the methodology of scientific research.

A form has been prepared to measure the pain associated with the flattening of the foot or feet after presenting it to the specialists.

Zebris digital foot scanner platform device (German-made)(Appendix (2)). Measuring length. Medical Scale. nicon zoom camera 50 mg. Calculator (laptop dell).

2-4 Field Research Procedures:

2-4-1 Determining the degree of pain:

2-4-2 Measuring flat feet: Before conducting the test on thefoot scan of the research sample, a preliminary test was conducted on the community (16) to determine the flatness of the feet or foot in different places (Faculty of Physical Education and Sports Sciences, closed hall for sports activity). The researcher conducted a test (water pool) by immersing the feet of the sample in the water pool and then printing the feet on a flat and dry ground. (14) individuals with flat feet or feet from the identified community (16)

Figure (1) footprint, footstep

2-4-3 Reconnaissance Experiment:

The researcher conducted a survey experiment on some of the (5) sample members to identify:

Validity of the form for the research sample

Device Validity for Search Sample

Relevance of exercises to the research sample

The time taken by the sample during the tests.

2-4-4 Pre-test: The pre-test was conducted on the research sample by measuring the degree of flatness and the degree of pain .

2-4-5 Application of the therapeutic approach: The therapeutic approach was applied to the research sample for a period of 8 weeks by five therapeutic units per week and by 40 therapeutic units for the purpose of treating the deformity in the metatarsal.

2-4-6 Post-test: The researcher was keen to conduct post-tests under the same conditions in which the pre-test was applied. Statistical means. The researcher used the statistical bag (spss)

3-Presentation, Analysis and Discussion of the Results:

3-1 Displaying the shapes of the average foot pressure and the average foot strength:

When viewing the shapes obtained from the foot scanner, we will notice that the transfer by force from the heel of the foot to the combs is not ideal in the pre-test, as well as the difference in pressure and strength. We notice the transfer by force incorrectly. Once we notice that the pressure in the heel is small and the increase in the combs, and once we notice that the pressure in the heel is large and in the combs is small, but in the post-test, the transfer of force was characterized by a streamlined presence and that the distribution of pressure was ideal on the foot .

Here are some examples:

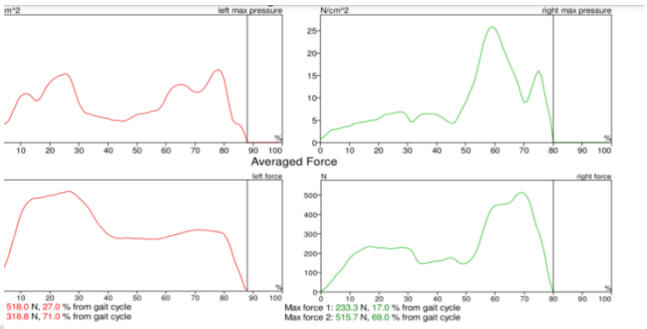

Fig (1) Shows the pressure and strength rate of the foot

We note that the uneven transfer of force leads to an uneven distribution of pressure, that is, we note that the pressure in the heel of the right foot is low and then it is large in the combs, which is not ideal in the pre-test .

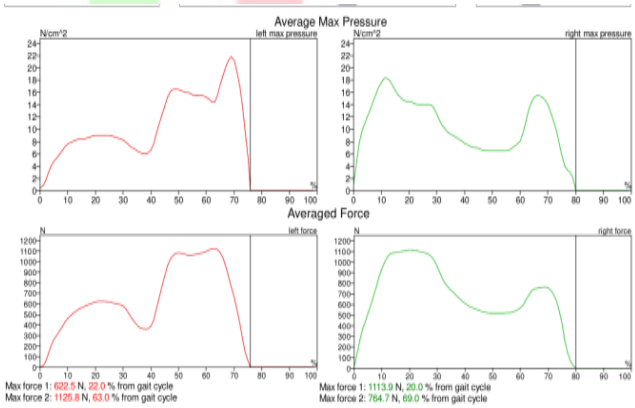

Figure (2) Shows the average strength and pressure of the foot

We note that the uneven transfer of force leads to an uneven distribution of pressure, that is, we note that the pressure in the heel of the left foot is low and then it is large in the combs, which is not an ideal distribution. (Fig.3)

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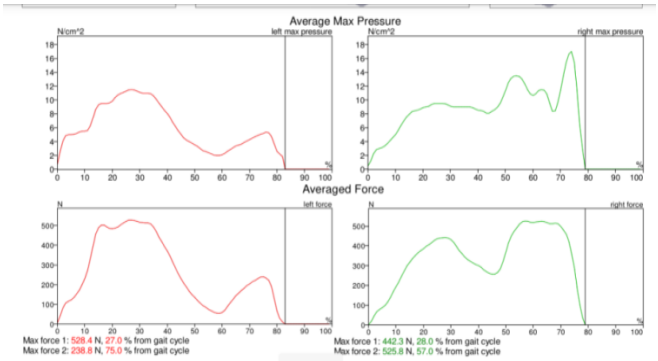

Fig (3) Shows the rate of force and pressure in the foot

In this form, we note that the uneven transmission of force leads to an imperfect distribution of pressure, that is, we note that the pressure in the heel of the foot is large and then there is little in the combs. Any imperfect distribution leads to many problems as a result of the body making many adaptations to maintain the imaginary line of the body, which causes pain in different parts of the body. In the post-test, the force and pressure on the heel and combs were distributed in a wonderful flow that achieved perfect balance and did not show pain to the individual .

3-2 Presentation, analysis and discussion of the results of flattening variables to the degree of pain:

3-2-1 Presentation and analysis of the results of the two variables of the degree of pain and rotation of the foot of the right man:

Table (2) Shows the arithmetic mean, standard deviation and correlation coefficient between the degree of pain and the rotation of the foot of the right leg

Variables	Arithmetical mean (Maths)	Standard deviation (Maths)	Correlation coefficient (Maths)	(Significance level)	Sig.
Degree of pain	12.4	2.5	0.73	0.007	Corporate
Rotation of the right foot	8.76	4.35			

Through Table (2), it was found that the arithmetic mean of the degree of pain is (12.4) and the standard deviation is (2.5), and that the arithmetic mean of the right foot rotation is (8.76) and the deviation of the right foot rotation is (4.35). The correlation coefficient was (0.73)at the level of significance is (0.007). This means that there is a high moral correlation between the degree of pain and the rotation of the right foot, that is, whenever the angle between the longitudinal axis of the foot and the direction of walking increased, the pain increased in the injured .

3-2-2 Presentation and analysis of the results of the two variables of the degree of pain and rotation of the foot of the left leg:

Table (3) Shows the arithmetic mean, standard deviation and correlation coefficient between the degree of pain and the rotation of the left foot

Variables	Arithmetical mean (Maths)	Standard deviation (Maths)	Correlation coefficient (Maths)	(Significance level)	Sig
Degree of pain	12.4	2.5	-0.043	454	Unsignificant
LEFT FOOT. (grunts)	12.16	915			

Through Table (3), it was found that the arithmetic mean of the degree of pain (12.4) and the standard deviation (2.5) and that the arithmetic mean of the left foot rotation (12.16) and the deviation of the left foot rotation (5.915) and the correlation coefficient (-0.043) at the level of significance (0.454)This means that there is a non-significant correlation between the degree of pain and the rotation of the left foot.

3-2-3 Presentation and analysis of the results of the pain and footprint variables for the right man:

Table (4) Shows the arithmetic mean, standard deviation and correlation coefficient between the degree of pain and the footprint of the right man

Variables	Arithmetical mean (Maths)	Standard deviation (Maths)	Correlation coefficient (Maths)	(Significance level)	Sig
Degree of pain	13.4	3.5	763	0.005	Moral
Lifting up the right leg.	74.9	568			

Through Table (4), it was found that the arithmetic mean of the degree of pain (12.4) and the standard deviation (2.5) and the arithmetic mean of the right foot print (74.9) and a standard deviation of (18.568). When finding the correlation coefficient of (0.763) at the level of significance (0.005), this means that there is a high moral correlation between the degree of pain and the foot print of the right man, that is, the greater the foot print, the greater the degree of pain in the injured .

3-2-4 Presentation and analysis of the results of the two variables of the degree of pain of the foot print of the left leg:

Table (5) Shows the mean, standard deviation and correlation coefficient between the degree of pain and the footprint of the left leg

Variables	Arithmetical mean (Maths)	Standard deviation (Maths)	Correlation coefficient (Maths)	(Significance level)	Sig.
Degree of pain	12.4	2.5	0.321	0.183	Immaterial
LEFT FOOT. (grunts)	79-91.	973			

Through Table (5), it was found that the arithmetic mean of the degree of pain (12.4) and the standard deviation (2.5) and the arithmetic mean of the right foot print (79.91) and the deviation of the right foot print (7.973) and when finding the correlation coefficient of (0.763) at the level of significance (0.005), this means that there is no correlation between the degree of pain and the foot print of the left man.

3-2-5 Discussing the results of the degree of pain associated with rotation and foot impression:

After presenting and analyzing the results reached from the pain measurement form and the foot scanner, it was found that there is a significant correlation between the right foot and the appearance of pain symptoms in different places in the body, such as the head, lower back and knees, as all that the foot moved away from the course of movement, all that led to its dislocation or (the lack of distribution of body weight on the base of the support, which represents the comb), and this in turn leads the body to a set of adaptations to maintain the imaginary line that passes from the nipple of the ear through the shoulders and hips to the heels. These adaptations work on the appearance of pain in different places of the body, and this is confirmed by many specialists, including (Dr. Bassem Abdel Amir, a nervous sentence board), (Dr. Ammar Khyun Jarallah, an Arab fracture board) and (Dr. Hayy Faleh Mohammed ,a fellow of the American College of Surgeons, a specialist in bone and fracture surgery).

As for the lack of a correlation between the variables of rotation and footprint and the degree of pain variable, because three members of the sample were suffering from flattening of the right foot only, and the small size of the sample led to the lack of correlations.

4-Conclusions and Recommendations

4-1 Conclusions:

1-Therapeutic exercises have greatly reduced flat feet.

2-The further away the metatarsal from the line of travel, the greater the angle between the longitudinal axis of the foot and the direction of walking, which leads to increased pain in the injured.

3-Compensatory exercises must be performed to maintain the texture .

4-The larger the impression of the foot, the greater the degree of pain in the injured

5-Whenever there is an imbalance in the foot, the force is not evenly distributed between the heel of the foot and the metatarsals.

4-2 Recommendations:

1-The need to study the other variables of this sample and their relationship to the appearance of pain in different places in the body.

2-The need to conduct research on the behavior of people with flat feet.

3-Conducting similar studies to compare the owners of flattening the right foot and flattening the left foot.

4-The need to conduct a study on the design of special shoes for people with flat feet.

References:

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[3] Sareh Abdul Karim Alfadli and (others): Exercises according to the change in frictional forces on different surfaces in the development of the last steps and the launch of some vertical jumping movements for young people, Journal of Physical Education Sciences, Faculty of Physical Education/ University of Karbala, Issue 3,Volume, 2012, 5.

Appendices

Appendix (1) Personal interviews;

Prof. Dr. Ali Mahdi Hadi, Falsaja ,Volleyball, Faculty of Physical Education and Sports Sciences, Qadisiyah University,18/10/2023,at (10) am.

Prof. Dr. Falah Hassan Abdullah, Falsaja, Basketball , Faculty of Physical Education and Sports Sciences, Al-Qadisiyah University, Faculty of Physical Education and Sports Sciences Laboratory,19/10/2023,at 9 am.

Prof. Dr. Asaad Adnan Aziz, Falsaja ,Volleyball , Faculty of Physical Education and Sports Sciences, Al-Qadisiyah University, Volleyball Court,16/10/2023,at 10:30 am.

Dr. Bassem Abdel-Elah Ali, Board of Pediatric Wholesale Medicine, Specialty of Neurology, Diwaniya Teaching Hospital, Neurological Wholesale Consultation,4/10/2023, at 10.14 am.

Dr. Ali Abdel Abbas, Arab Board, Fracture Physician, Diwaniya Teaching Hospital, Administrative, 3/10/2023, at 12 pm.

Dr. Yahya Faleh Mohammed, Fellow of the American College of Surgeons, Physician of Orthopedic and Fracture Surgery, 10/10/2023,at11.36am.

Appendix (2) Measuring the symptoms associated with flat feet

The researcher intends to conduct a research on (measuring the flatness of the foot or feet using a foot scanner) and its effect to the degree of pain in middle school students in Qadisiyah Governorate)

#	Symptoms	Marking
1	Fatigue	
2	He suffers from head pain	
3	Suffers from pain in the lower back	
4	He suffers from neck pain	
5	Suffers from pain in the knees	

Appendix (3) Digital Foot Scan ®(Explicit Abdul Karim Alfadli and (others): 2012, 5)

-It is a digital electronic panel to measure the dynamics of the force applied by the foot on the ground and contains high-frequency digital sensors.

-It measures the amount of force applied by the body to the ground and equals Newton divided by the square centimeter Pressure=N/cm2 and the dynamics of foot movement on the ground ,and measures the amount of frequencies during the time of contact of the foot surface of the platform (the ground), through high-frequency digital sensors located at a rate of four sensors per square centimeter.