

Comparison between specifications of ergonomic outdoor fitness equipment with anthropometric characteristics of girl student users: A case study on Taharoksazane Farda brand equipment

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ABSTRACT

In recent years for insure health and developing sporty activities of students, schools of country accoutrements to outdoor fitness equipment. Attending this systems often build by copy from foreign kinds, aim of this research is to analyze adjustment of accommodation scantlings these systems by anthropometric characteristics of Iranian daughter student users. From over 35 brand mark of outdoor fitness equipment current in the schools, the brand by the name of Taharoksazane Farda is distributed more and six systems, step forward, step sideways, standing rotator, shoulder stretch, jumping height and fix bicycle are used evaluated in schools. Between girl students in high school of Tehran ,100 samples evaluated for anthropometric characteristics and average and percentile 5, 50, and 95, and standard aberration of anthropometric characteristics gets from users by ergonomic characteristics of selected bodybuilding systems which measured by using TTak method comprised, bilateral sample in significant level 0/05 (95 percent affiance).

Key words: ergonomic, outdoor fitness equipment, anthropometric characteristics, girl students.

INTRODUCTION

Sport is a part of healthful life and in recent decade, everyday numbers of whom are exercising increased. Existing of sporting area in all over the world is a citizenship right. Accordingly facilities are available until citizen with lower charge and capabilities, keep their body and mental health. In recent years making and installing several sport accouterment for increasing body and muscled patience and also making esprit and gladness between citizens includes men and women, old and young and even babies in cities has been popular. History of making and using outdoor fitness equipment deviated to China in the year 1998 when they started wide combat to narcotics in their country. These systems in Iran for the first time in 1384/4 in Mellat park of Tehran was installed and started up. Using these systems was vogue some years in schools and parks of Iran. Mobilizing country's schools to outdoor fitness equipment by educational ministry can be evaluating action in same framework. Experts believe that using sporting tools in parks is profitable for health of community and publicity the culture of doing exercise (1). Although this point is significant that body situation of people is completely different from each other (1), due to that necessities of concerning special standard for using these systems emphasized. As systems and human's equipments should be design by caring specifications of users (2).they believe some installed outdoor fitness equipment besides don't have standard installation, even their building is not suitable (3). Some of these systems which installed in public place and schools often their scantling and length are not good for adults, however in most cases children and teenagers uses more these systems.

From year of 1388 for developing different sporting activation and provision of body and mental student's health and increase academic educated yearly 20 percent of country's school outfit by sporting equipment to contrive concern student in this field. Now frequently of girls high schools outfits by this fitness equipment, this affair is in a condition that owing to nonexistence necessary standards for designing this equipment and absence of adaptation those to specification of Iranian users body (wherefore designing and building these equipment for users of other country) sometimes using of them not only is not good but also effect harmful irrecoverable for their users. Equipment working in exercise activation should be design commensurate to organs of users to practice safe and effective (4). Concept of proportion works between athletics and every equipment, system or shoes and clothes or other sport tools(5). Navidi and Alipoor in the year of 1391 in two different researches assimilates kind, outbreak, reasons and mechanism of current injury to utilize fitness equipment in park with two mark of Heeger and Nirvana in young ,elderly and old men and women users, the results of their research was that between kind , outbreak and mechanism of current injury to utilize fitness equipment in park in two marks there is no significance different (6,7). The consequence of these researches confirm access of injury in different organs especially in the knee. Advantages of these systems are simplicity to using and doing exercise by helping weigh of user on the unit (8). However installing this equipment in the schools is good but there is no trust whether enough study about adaptation and proportion of this equipment to specification of students fared or not? Exercise equipment available in the parks which we name them Mekanoterrapin, in sum makes some strain in organ of body. This equipment should have some standards through used materials; design and measure of pressure that enter to body have completely defined (9). Notice to important factor like age, body size of students are points that should be cared by user when uses this equipment. Because wherever this equipment accordance to needs and personal specification will be prevent from possible hurt and physical pressure (10) .designers of fitness equipment not only should bound to adherence from law of fitness, but also is responsible to provide safety and comforting for users, this affair is fateful for fitness equipment, which also is not acceptable. Bounden law can increase quality of making and also joyful feeling of users (11).

Natural actions are one of important factor to do works with high efficiency, so working situation should Design like to have conformity by user's body and responsible for this important anthropometry's need. Anthropometry is a Grecian word which formed by two words Anthrope amount to human (men) and metry amount to measure. Dimensions of human's body are far different and major factors that effect on includes difference of origin- ethnic and economical – sociological, however another factors like age, gender, anatomy ,job, diet and changes of time also are effecting on body(12,13).one of application of anthropometry, is to standardize tools and equipment for one or all community(4).

Word of Ergonomic is intermixture of two words of Ergo(amount to work) and Nomos (amount to law).Ergonomic is a mollified science 3 which collected information about capacity of human and apply them to design jobs, products, systems related to human, work places and equipment by purpose of preventing occur problems and hurts related healthy and improvement efficiency. Maybe the best and briefer definition for ergonomic are science of conformity human and work place (machine...). Outlook of athletics and commonality of that to ergonomic contrivance years ago (14).technology of new engineering conduce to creating changes in designing fitness equipment by purpose of rising of working of sportsmen. Considering fitness equipment in park are producing by reduplication from foreign sample and whereas foreign equipment consist by size of adult, maybe are not suitable for using in Iranian student and Iran's school. However one of the ground rules of using fitness equipment is designing based on needs and personal specification. Because nonexistent of symmetry between specifications of systems with Anthropometry of users may reduce quality of exercise and also increase injuries and physical pressure (15). Therefore some parts of academic studies are about fitness equipment in park and more results of them are emblematic of absence proportion fitness equipment in park with Iranian users' anthropometry specification. For example in three different research sharif(1391), Seyf(1391), Mohammadi(1390)(16,17,18) ergonomics' specification of fitness equipment in park from three different company with specifications of men and women users in the parks was analyzed and pretend that fitness equipment in this research from anthropometry factors are not ergonomics for women users.

Its seems concerning about necessity of dimensions adaptation of this equipment should be care, because absence of appropriateness of this equipment with anthropometry size of users may cause short or long time injuries and quality and efficiency of exercise may be reduce. In this research tried to answer this question that whether ergonomics specification of outdoor fitness equipment are accordance with anthropometry specification of girl users. Characteristically aim of doing this research comprised ergonomics specification of outdoor fitness equipment with anthropometry specification of girl users.

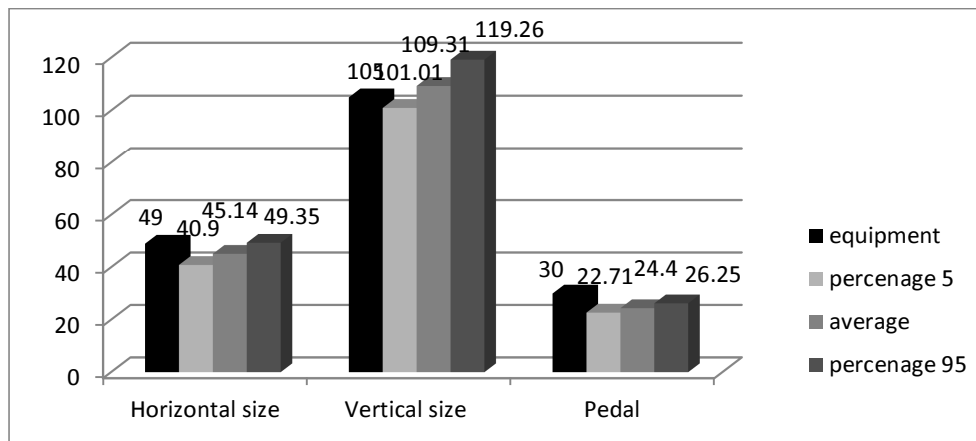
MATERIALS AND METHODS

Approach used in this research is scope comparison by measuring primary dimensions of outdoor fitness equipment and anthropometry specification of students. In accomplishment of research statistical sampling applied. Statistical community of high school girl student of Tehran city includes number of 164552, by using simple statistical sampling, 96 number of students acceded for statistical sample, in implementation of research 100 person of girl students from five major area of city (north, south, west, east and center) in the zone one, sixteen, four, two and six of education in Tehran city randomly and after fulfill form of personal information, major size of their body measured (anthropometry specification) by kit of anthropometry static and stadiometer. And between different outdoor fitness equipment in the Tehran, the brand by the name of Taharoksazane farad which has more frequency in schools of Tehran, six system step forward or air walker, step sideways or pendulum waist, standing rotator hip twister, shoulder stretch, high jump and fixed bicycle has maximum numbers of installing and distribution in Tehran, for instance ecstastically selected and measured by engineering meter. Likewise using from averages, standard aberration and percentile 5, 50 and 95 in the descriptive statistic and for conversional test from sample bilateral TTak and with certainties of 95 percent (in the meaningfully of 0/05).

RESULTS

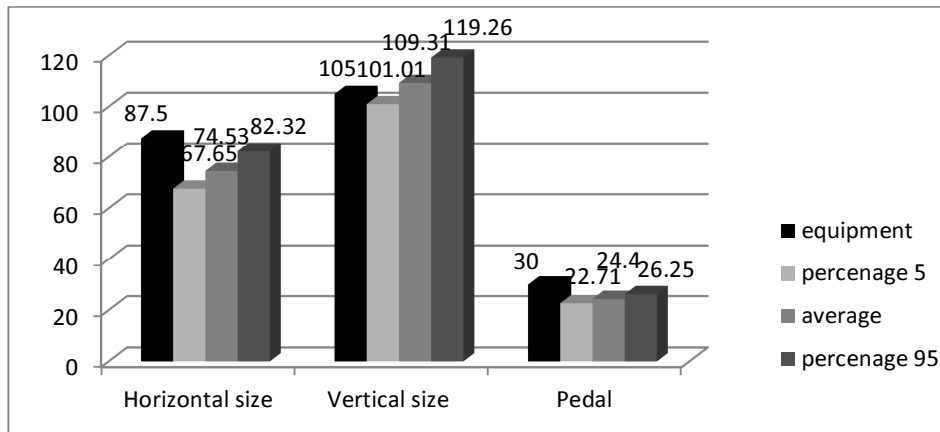
Domain ages of subjects were 14 to 17. And 40% of them 15 years old, 38% of them in the first year of high school were studying. 38% of subjects use the outdoor fitness equipment for sporting. 47/5% of them one day in a week use this systems and 48% of students tells that having fitness body is a major reason of using fitness equipment in park. 93% of subjects were right hand and 88% right foot. 23% has pain in their body.

The result of comparison specification of equipment as step forward or air walker, step sideways or pendulum waist, standing rotator or hip twister, shoulder stretch, high jump and fixed bicycle with the brand Taharoksazane Farda by average, percentages of 5, and 95 of specification of girl users anthropometry in the high school shown in diagrams 1 to 3.



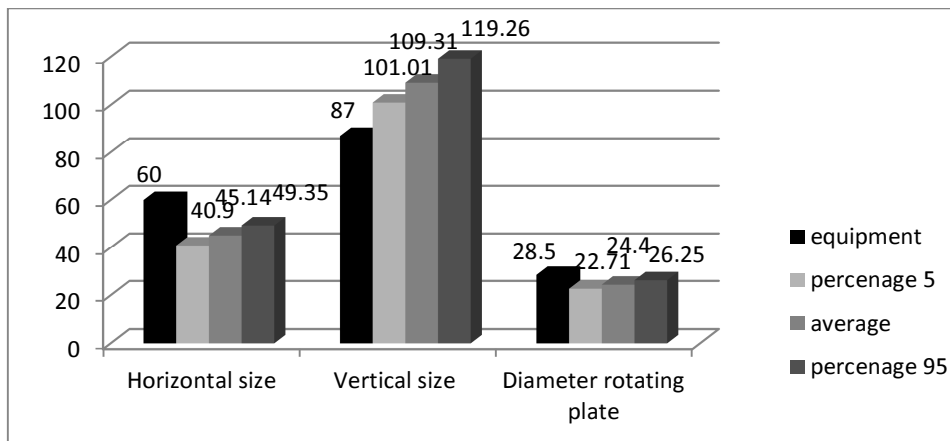
Diag.1: Deviation of specialty’s user anthropometry with specification of step forward in Taharoksazane Farda

From these diagrams can be founded that step forward systems in the Taharoksazane Farda horizontal distance until system with scanting corresponding in users in percentile of five, 9cm and average 4 cm more and in percentile of 95 right size and vertical measurement with the corresponding in users in percentile of five, 4 cm more and in percentile of 95 about 14 cm less and size of pedal, in percentile of five , 8cm and average 6cm more and in percentile of 95 about 4 cm more than size of students.

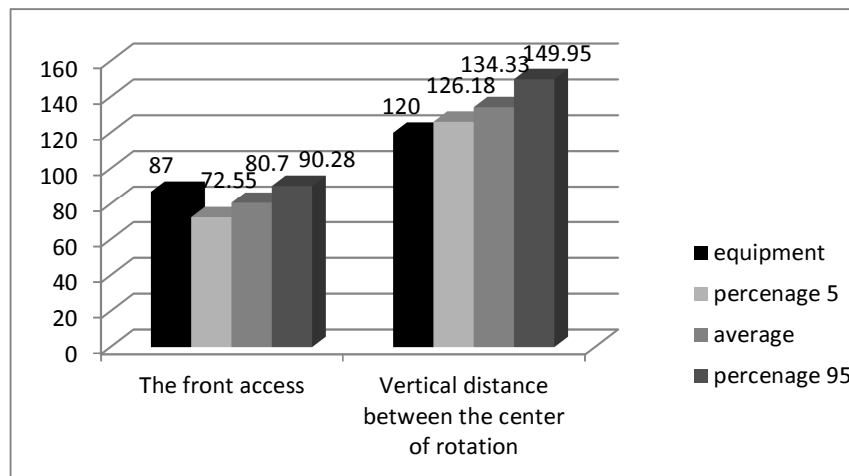


Diag.2: Deviation of specialty's user anthropometry with specification of step sideways in Taharoksazane Farda

In the step sideways systems, results shows that, in the Taharoksazane Farda horizontal distance until system with scanting corresponding in users in percentile of five, 20cm and average 13 cm and in percentile of 95 5cm more and vertical measurement with the corresponding in users in percentile of five, 4 cm more and average 4.5cm, in percentile of 95 about 14 cm less and size of pedal, in percentile of five, 8cm and average 6cm and in percentile of 95 about 4 cm more than size of students.



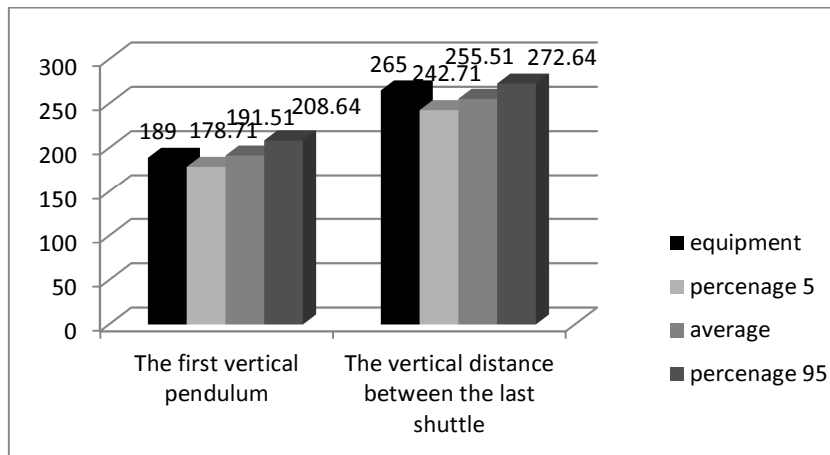
Diag.3: Deviation of specialty's user anthropometry with specification of standing rotator in Taharoksazane Farda



Diag.4: Deviation of specialty's user anthropometry with specification of shoulder stretch in Taharoksazane Farda

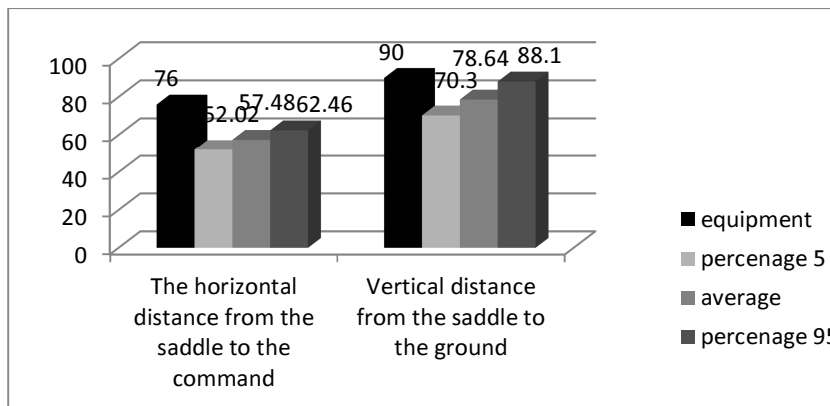
In the standing rotator systems, in the Taharoksazane Farda horizontal distance until system with scanting corresponding in users in percentile of five, 19cm and average 15 cm and in percentile of 95, 10.5cm more and vertical measurement with the corresponding in users in percentile of five, 14 cm and average 23cm, in percentile of 95 about 32 cm less and size of diameter of standing rotator’s disk, in percentile of five,6cm and average 4cm and in percentile of 95 about 2 cm more than size of students.

In the shoulder stretch systems, in the Taharoksazane farda a size of diameter of system with scanting corresponding in users, in percentile of five, 14.5cm and average 6 cm more and in percentile of 95 about 3 cm less than and vertical height of system until center of rotation , in percentile of five, 6cm and average 14cm and in percentile of 95 about 30cm less and size of student’s bodies.



Diag.5: Deviation of specialty’s user anthropometry with specification of high jumpin Taharoksazane Farda

In the high jump systems, in the Taharoksazane Farda minimum height of systems with scanting corresponding in users, in percentile of five, 32cm and average 45 cm and in percentile of 95 about 62 cm less than and vertical height of system until with scanting corresponding in users, in percentile of five, 18cm and average 31 cm more and in percentile of 95 about 48 cm less than size of student’s bodies.



Diag.6: Deviation of specialty’s user anthropometry with specification of fixed bicycle in Taharoksazane Farda

In the fixed bicycle systems, in the Taharoksazane Farda horizontal distance until systems capitulary with scanting corresponding in users, in percentile of five, 24cm and average 18.5 cm and in percentile of 95 about 13.5 cm more and height of bicycle’s saddle until with scanting corresponding in users, in percentile of five, 20cm and average 11 cm more and in percentile of 95 about 2cm more than size of student’s bodies.

Table 1: Result of T test of average and percentiles of 5, 50, and 95 for step forward and step back systems in Taharoksaznefarad

Variable	calculation method	Average	SD	T	P	Affiance 95%		5 th	50 th	95 th	T 5	T 50	T 95	P 5	P 50	P 95
						Lower limit	Upper limit									
Vertical distance shoulders to grip body	Elbow length - grip+ (Length of Shoulder Elbow* <i>sin</i> 30)	45.14	2.87	-9.95-	0.000	-3.43	-2.29	40.90	44.87	49.35	-24.74	10.91	4.70	0.0000	0.0000	0.0000
Horizontal distance from the heel to the pedal support	Taharoksaz ne farad	49	-	-13.43	0.000	-4.29	-3.29				-28.22	-14.39	1.22	0.0000	0.0000	0.2255
Vertical distance from the foot to grip	Height from shoulder- (Length of Shoulder Elbow* <i>sin</i> 30)	109.31	6.20	-11.60	0.000	-8.42	-5.96	101.01	109.42	119.26	-24.98	-11.42	4.45	0.0000	0.0000	0.0000
Vertical distance from the fulcrum cycling	Taharoksaz ne farad	105	-	6.95	0.000	3.08	5.54				-6.44	7.13	23	0.0000	0.0000	0.0000
Foot length	Foot length	24.40	1.37	-40.90	0.000	-5.87	-5.33	22.71	24.15	26.25	-53.25	-42.73	-27.39	0.0000	0.0000	0.0000
Pedal	Taharoksaz ne farad	30	-	-40.90	0.000	-5.87	-5.33				-53.25	-42.73	-27.39	0.0000	0.0000	0.0000

Table 2: Result of T test of average and percentiles of 5, 50, and 95 for Step sideways systems by Taharoksaznefarda

Variable	calculation method	Average	SD	T	P	Affiance 95%		5 th	50 th	95 th	T 5	T 50	T 95	P 5	P 50	P 95
						Lower limit	Upper limit									
The horizontal distance between the side grip	(Length of Shoulder Elbow* <i>sin</i> 30)*2+ Shoulder width acromion	74.53	5.87	-31.48	0.000	-19.64	-17.31	67.65	74.16	82.32	-43.19	-32.10	-18.19	0.0000	0.0000	0.0000
Horizontal distance from the heel to the pedal support	Taharoksaz ne farad	87.5	-	-22.10	0.000	-14.14	-11.81				-33.82	-22.73	-8.83	0.0000	0.0000	0.0000
Vertical distance from the foot to grip	Height from shoulder- (Length of Shoulder Elbow* <i>sin</i> 30)	109.31	6.20	20.65	0.000	11.58	14.04	101.01	109.42	119.26	7.27	20.83	36.71	0.0000	0.0000	0.0000
Vertical distance from the fulcrum cycling	Taharoksaz ne farad	105	-	6.95	0.000	3.08	5.54				-6.44	7.13	23	0.0000	0.0000	0.0000
Foot length	Foot length	24.40	1.37	-48.21	0.000	-6.87	-6.33	22.71	24.15	26.25	-60.56	-50.04	-34.70	0.0000	0.0000	0.0000
pedal	Taharoksaz ne farad	30	-	-40.90	0.000	-5.87	-5.33				-53.25	-42.73	-27.39	0.0000	0.0000	0.0000

Table 3: Result of T test of average and percentiles of 5, 50, and 95 for standing rotator system in Taharoksaznefarda

Variable	calculation method	Average	SD	T	P	Affiance 95%		5 th	50 th	95 th	T 5	T 50	T 95	P 5	P 50	P 95
						Lower limit	Upper limit									
Vertical distance shoulders to grip body	Elbow length - grip+ (Length of Shoulder Elbow* <i>sin</i> 30)	45.14	2.87	-44.75	0.000	-13.43	-12.29	40.90	44.87	49.35	-59.52	-45.70	-30.11	0.0000	0.0000	0.0000
Horizontal distance from the heel heel to the base of support	Taharoksaz ne farad	60	-	-51.72	0.000	-15.43	-14.29				-66.48	-52.66	-37.07	0.0000	0.0000	0.0000
Vertical distance from the foot to grip	Height from shoulder- (Length of Shoulder Elbow* <i>sin</i> 30)	109.31	6.20	23.07	0.000	13.8	15.54	101.01	109.42	119.26	9.69	23.26	39.13	0.0000	0.0000	0.0000
Vertical distance from the fulcrum turntable support	Taharoksaz ne farad	87	-	35.97	0.000	21.08	23.54				22.60	36.16	52.03	0.0000	0.0000	0.0000
Foot length	Foot length	24.40	1.37	-26.29	0.000	-3.87	-3.33	22.71	24.15	26.25	-38.64	-28.12	-12.78	0.0000	0.0000	0.0000
Diameter rotating plate	Taharoksaz ne farad	28.5	-	-29.94	0.000	-4.37	-3.83				-42.29	-31.78	-16.44	0.0000	0.0000	0.0000

Step forward and back forward system

In this system three basic measurements vertical height footboard of system until backrest, length metatarsi with hoof and horizontal distance of scapula till handles in users and systems comprised and by attending to similarity application of Step forward systems and step back system with treadmill and configuration of centralization in this system, levers almost are equal to height of ancon and the way to taking levers for elbow has angle to paralleling ancon with horizon's arbor. About 30 degrees to elbow flections (19).

Result observed in the tables between horizontal and vertical measure and length of sample's foot with scanting corresponding of them, there is meaningful differential.

Step sideways systems

In this system like step forward comprised three basic measurements vertical height footboard of system until backrest, length of metatarsi with hoof and horizontal distance of scapula till handles in users and systems and heedfully to findings of Herbetz and colleges about effect of condition of shoulder and ancon on muscular tiredness, average degree advised for abduction is about 45(20).

Result observed in table 2 shows that in Taharoksaznefarda between average of horizontal and vertical measure and length of sample's foot with scanting corresponding of them, there is meaningful differential.

Standing rotator system

In this system like step forward three basic measurements vertical height footboard of system until backrest, diameter of Standing rotator's disk with length of metatarsi and horizontal distance of scapula till handles in users and systems are comprising, heedfully similarity of centralization on standing rotator and step forward system, pivot of calculations body's angles is step forward systems.

Ditto result observed in table 2 about Taharoksaznefarda between average of horizontal and vertical measure and length of sample's foot with scanting corresponding of them, there is meaningful differential.

Shoulder stretch system

In this system two basic measures, height of stand shoulder until center of rotation in system and horizontal distance until handle steering wheel in users and systems are comprised with each other and concerning to degree of shoulder and elbow in this system, norm is degree in step sideways system.

Ditto result observed in table 4 in Taharoksaznefarda between averages of vertical and length of samples steering wheel with scanting corresponding of system, there is meaningful differential.

High jump system

This system act like Sargent test (jumping height) so criterions of this test situated as standard test. For calculation measure of first Avang amount of user's access and for last or uppermost Avang, the top record got in the championship of country matches situated as standard. Base on reporting council of body preparation of education ministry, the best record of jumping height in Sargent test of high school girl students in summer of 91, concern to age of 17 years old, was 64 centimeter which normalizes the highest level of jumping (21).

The results observed in table 5 for Taharoksazne farad confirm that between minimum and maximum height averages of samples with scanting corresponding of system there is meaningful differential.

Fixed bicycle system

In this system two basic measurement horizontal distance of handlebar and vertical distance of saddle until earth are base of calculation. Concerning to similarity of setting configuration of person on fix bicycle system with bicycle which is in a condition of flat knee, foot without any angle in toggle should be easily stand on the pedal also based on application on setting bicycle for bicyclists, measure the height of on until fissure, let your foot in frame of bicycle and let your foot completely on the earth. In this condition axle of bicycle should not completely touch your fissure (22).

Ditto result observed in table 6 in Taharoksaznefarda between averages of horizontal distance until steering wheel and vertical height sample's saddle with scanting corresponding of system there is meaningful differential.

Table 4: Result of T test of Average and percentiles of 5, 50, and 95 for Shoulder stretch system in Taharoksaznefarda

Variable		calculation method	Average	SD	T	P	Affiance 95%		5th	50th	95 th	T 5	T 50	T 95	P 5	P 50	P 95
							Lower limit	Upper limit									
Available at the front		(Shoulder length grip*cos45)*2	80.70	7.42	-5.79	0.000	-5.77	-2.83	72.55	81.15	90.28	-16.78	-5.19	7.12	0.0000	0.0000	0.0000
Horizontal distance from the steering handle	Taharoksazne farad	87	-	-8.49	0.000	-7.77	-4.83					-19.47	-7.88	4.42	0.0000	0.0000	0.0000
Standing shoulder height to the center of rotation		Standing shoulder height	134.33	6.08	6.08	0.000	5.12	7.53	126.18	133.50	149.95	-2.99	9.5	29.52	0.0000	0.0000	0.0000
Vertical distance from the ground to the center of rotation	Taharoksazne farad	120	-	23.55	0.000	13.12	15.53					101.16	22.20	42.68	0.0000	0.0000	0.0000

Table 5: Result of T test of average and percentiles of 5, 50, and 95 for high jump system in Taharoksaznefarda

Variable		calculation method	Average	SD	T	P	Affiance 95%		5th	50th	95 th	T 5	T 50	T 95	P 5	P 50	P 95
							Lower limit	Upper limit									
The high availability		Shoulder length grip+ Height from shoulder	191.51	9.64	2.61	0.011	0.60	4.43	178.71	191.6	208.64	-10.67	2.70	20.37	0.0000	0.0082	0.0000
Vertical distance between the first pendulum	Taharoksazne farad	146.5	-	46.69	0.000	43.10	46.93					33.41	46.78	64.46	0.0000	0.0000	0.0000
Maximum level of high availability		Record maximum Sargent+(Shoulder length grip+ Height from shoulder)	255.51	9.64	-9.84	0.000	-11.40	-7.57	242.71	255.60	272.64	-23.12	-9.75	7.93	0.0000	0.0000	0.0000
Vertical distance between the last shuttle	Taharoksazne farad	224.5	-	32.17	0.000	29.10	32.93					18.89	32.26	49.94	0.0000	0.0000	0.0000

Table 6: Result of T test of average and percentiles of 5, 50, and 95 for fixed bicycle system in Taharoksaznefarda

Variable		calculation method	Average	SD	T	P	95%affiance		5th	50th	95 th	T 5	T 50	T 95	P 5	P 50	P 95
							Lower limit	Upper limit									
Vertical distance from the saddle to the ground		(Shoulder length grip* sin60)+ acromion	57.48	3.96	-	0.000	-13.31	-11.74	52.02	57.16	62.46	45.40	32.42	-19.4	0.0000	0.0000	0.0000
The horizontal distance from the saddle to the command	Taharoksazne farad	76	-	46.75	0.000	-19.31	-17.74					60.56	47.58	34.19	0.0000	0.0000	0.0000
Leg to hip height		Knee height)- (Buttock-knee length+ Height of seat	78.64	5.29	-	0.000	-7.41	-5.31	70.30	78.72	88.01	27.79	11.87	5.69	0.0000	0.0000	0.0000
Vertical distance from the saddle to the ground	Taharoksazne farad	90	-	21.48	0.000	-12.41	-10.31					37.24	21.32	-3.76	0.0000	0.0000	0.0003

Discourse

The aim of doing this research is to comprise ergonomic specifications of outdoor fitness equipment with the brand by the name of Taharoksazne farad by anthropometric characteristics of girl student users which include six fitness systems. Concerning to limited background about this case, results extraction from this research represents understate, however has corresponding with scant previous studies.

One of the aims of this research comprised ergonomic specifications of forward step system and back step system with some anthropometric characteristic of girl student users, resultant of this research shows that in Taharoksaznefarda respectively horizontal and vertical measure and pedal measure of forward step and back step systems has no corresponding with basic characteristics of girl high school student users.

Second aim comprising ergonomic specifications of sideways system with some anthropometric characteristic of girl student users, resultant of this research shows that in Taharoksaznefarda respectively horizontal and vertical measure and pedal measure of sideways step systems has no corresponding with basic characteristics of girl high school student users.

Third aim comprising ergonomic specifications of standing rotation system with some anthropometric characteristic of girl student users, resultant of this research shows that in Taharoksaznefarda respectively horizontal and vertical measure and side measure of standing rotation systems has no corresponding with basic characteristics of girl high school student users.

Fourth aim comprising ergonomic specifications of shoulder stretch system with some anthropometric characteristic of girl student users, resultant of this research shows that in Taharoksaznefarda respectively diameter of steering wheel and vertical measure of shoulder stretch systems has no corresponding with basic characteristics of girl high school student users.

Fifth aim comprising ergonomic specifications of high jump system with some anthropometric characteristic of girl student users, resultant of this research shows that in Taharoksaznefarda respectively measure of first swing and last swing of jumping height system has no corresponding with basic characteristics of girl high school student users.

Sixth aim comprising ergonomic specifications of fixed bicycle system with some anthropometric characteristic of girl student users, resultant of this research shows that in Taharoksaznefarda respectively horizontal measure until steering wheel and vertical measure of saddle until earth in fix bicycle systems has no corresponding with basic characteristics of girl high school student users.

Concerning to lack of per capita sporting place and also coincident using and ... can be culminate to injuries and preventive factor in advancement of sporting schools (23). It is necessary to concern another factors observed in conducting this research: however using these systems is welcoming by students, as often they use these system in rest time but whereas outdoor fitness equipment in schools generally installed in yard of schools, reduce remarkable open and usable space in sport and resting time (often in the yard) of schools, especially in the small schools which has limited space. Moreover most of this fitness equipment installed without any regulation of respective experts which are not suitable in place and way of installing and make some problems and often effect on consuming space of playing or campus of schools. In addition there is because possibility of encounter students to these systems in exercise time because of nearness of installing place of this system with playing yard in schools and disregard safety of playing yards and lead to irrecoverable injuries for students. Further often these systems has no manual for working and because students has no acquaintance for using some of these systems, it cause to injuries and lesion for students and despite designing these systems for adults, We looking that these systems installed in different section of schools even in elementary schools. In addition base on evaluation, none of these systems has guarantee and after sales services in schools, if these systems broke or deform (due to legion of users and unsuitable using of students, systems often broke or deform) there is no services for supporting or repairing and this too make some problems or suffering for students.

CONCLUSION

Outcome of this research shows that the main problem of two brands is nonexistent of balance in linear dimensions and horizontal distance to backrest of systems with size of user's bodies. This difference in standing rotation is more visible in both brands. Also in high jump, shoulder stretch and fixed bicycle in Taharoksazane Farda looks more linear variance and, this is due to increasing lesion of using outdoor fitness equipment. Also as observing anthropometric dimensions of students expanded in one domain of maximum and minimum. For instance measuring the student's height shows that average height of students is 161.4 centimeter. In this typical of hundred, the minimum of height of high school students were 140.5 and maximum 176.3 centimeter which has domains of about

35.8 centimeter. This issue will be occasion for designing and making systems harder corresponding to student's body .to solve this problem presented To address this problem, the proposed solution is For some parts of the design and construction of devices Removable and adjustable done, which means that The device measures the minimum and maximum dimensions and sizes Adjustable anthropometry be considered.

Last result of this research shows that most outdoor exercise equipment by the name of Taharoksazane Farda is nor ergonomic in anthropometric factors for girl high school student users.

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