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Comparative Analysis of Foot Pressure Distribution Between Weight Pertinence Sports and Non Weight Pertinence Sports Athletes

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ABSTRACT

The inspiration driving the examination was to plantographically assess the foot erection under an essential load and to choose the rate of level feet in contenders of weight pertinence recreations and non-weight pertinence amusements. A social event of 5 female of non-weight pertinence diversions and 5 female of weight pertinence amusements developed 19 – 25 years were examined by plantography at balanced body weight stack (standing). The accompanying factors were recorded from the weight plate: foot length and width, rear foot width, curve list of the feet and weight conveyance by various parts of the feet with the assistance of programming. To analyze the information from two gatherings *t*-test is utilized and level of hugeness was set at 0.05 level. There was no critical contrast of weight effort by tarsal bones, meta-tarsal bones, mid foot, mid rear area and sidelong rear area of left and right feet of the weight pertinence and non-weight pertinence games players found. Just the huge distinction was found between the tarsal 2-5 bones of left feet by (0.047<0.05) of weight bearing and non-weight pertinence games players at the level of hugeness of 0.05.

Keywords: Plantography, pressure.

1. INTRODUCTION

Human foot with its supporting, stun submerging and locomotor cutoff points is essential for our advancement. As per Hackenbroch, around 98% of children have solid feet yet just around 40% keep up them in sound state until the point that the minute that adulthood and this is of specific significance in sports as the contenders are subjected to different strenuous weights. Complexities in the tallness of foot twist were spoken to contenders tending to particular entertainments or in the relationship between foot structure and redirection result. The dynamic and uninvolved foot change is gigantically excellent in swimmers (strife with water security, no middle stack) separated and weight lifters (massive focus loads).

Foot twists in volleyball players were spoken to be more positive than in hockey players, wrestlers or untrained subjects. Foot morphology and its relations to hazard factors in beguilements and exercise-began wounds are of intrigue, e.g. concerning standards noteworthy to sports and clinical diagnostics and to the relationship between foot building and age, sexual presentation and weight/stature relations like BMI. A few producers push that an examination of foot twists should consider unmistakable statodynamic conditions on account of the stepwise framework actuating weight plate. The reason for this examination was hence to plantographically evaluate the foot structure under a middle point stack and to pick the occasion of level feet of players of weight bearing diversions and non-weight bearing entertainments.

2. MATERIAL AND METHODS

A gathering of 10 female, individuals from LNIPE, Gwalior volunteered to take an interest in the investigation. Their age was 19-25 years, body stature 150-170cm, weight 50-70 kg. They prepared 4 – 5 times each week and took an interest in different rivalries in their age classification.

Impressions were recorded in standing position (under an adjusted pivotal encumbrance) for the privilege and left feet independently. The accompanying factors were recorded separated from body tallness and mass:

- Maximum foot length,
- Maximum foot width,
- Arch index
- Average pressure exerted by various parts of the feet,

Understudy's *t*-test for autonomous information was utilized to survey the contrasts between the distinctive gatherings examination, the level of $p \leq 0.05$ being viewed as critical.

3. RESULTS

Mean estimations of all examined foot erection factors are appeared in Table 1. Singular information were gone up against with the particular typical range.

Table 1 mean regards (±SD) of foot erection factors beneath center encumbrance of body weight (rampant consequence) of female players from weight bearing recreations and non-weight pertinence diversions ($n = 10$).

Table 1
Comparison of means of various parts of the foot between weight pertinence and non-weight pertinence sports
Group statistics

	Weight Bearing Groups	*N*	*Mean*	*Std. Deviation*	*Std. Error Mean*
Tarsal1right	Weight bearing	5	8.6000	8.38451	3.74967
	Non weight bearing	5	14.6000	6.22896	2.78568
Tarsal Left	Weight bearing	5	10.4000	3.50714	1.56844
	Non weight bearing	5	11.0000	7.00000	3.13050

(*Contd...*)

	Weight Bearing Groups	*N*	*Mean*	*Std. Deviation*	*Std. Error Mean*
Tarsal2-5right	Weight bearing	5	3.8000	3.49285	1.56205
	Non weight bearing	5	8.0000	2.91548	1.30384
Tarsal2-5left	Weight bearing	5	7.2000	2.38747	1.06771
	Non weight bearing	5	21.4000	31.50873	14.09113
Metatarsal1right	Weight bearing	5	17.2000	2.58844	1.15758
	Non weight bearing	5	17.2000	3.76829	1.68523
Metatarsal1left	Weight bearing	5	18.6000	2.70185	1.20830
	Non weight bearing	5	18.0000	5.52268	2.46982
Metatarsal2right	Weight bearing	5	19.8000	7.66159	3.42637
	Non weight bearing	5	17.2000	3.76829	1.68523
Metatarsal2left	Weight bearing	5	22.2000	12.13260	5.42586
	Non weight bearing	5	29.6000	7.02140	3.14006
Metatarsal3right	Weight bearing	5	27.0000	4.58258	2.04939
	Non weight bearing	5	32.8000	2.58844	1.15758
Metatarsal3left	Weight bearing	5	30.4000	6.58027	2.94279
	Non weight bearing	5	34.2000	8.52643	3.81314
Metatarsal4right	Weight bearing	5	29.0000	5.95819	2.66458
	Non weight bearing	5	39.6000	9.83870	4.40000
Metatarsal4left	Weight bearing	5	31.4000	9.20869	4.11825
	Non weight bearing	5	28.6000	6.22896	2.78568
Metatarsal5right	Weight bearing	5	19.8000	5.80517	2.59615
	Non weight bearing	5	23.0000	6.74537	3.01662
Metatarsal5left	Weight bearing	5	19.4000	5.77062	2.58070
	Non weight bearing	5	16.0000	4.58258	2.04939
Midfootright	Weight bearing	5	29.4000	9.04434	4.04475
	Non weight bearing	5	27.6000	5.31977	2.37908
Midfootleft	Weight bearing	5	17.8000	10.28105	4.59783
	Non weight bearing	5	23.4000	6.34823	2.83901
Midheelright	Weight bearing	5	35.8000	3.27109	1.46287
	Non weight bearing	5	37.4000	3.78153	1.69115
Midheelleft	Weight bearing	5	35.6000	2.70185	1.20830
	Non weight bearing	5	37.2000	4.14729	1.85472
Lateralheelright	Weight bearing	5	35.6000	3.36155	1.50333
	Non weight bearing	5	37.4000	3.78153	1.69115
Lateralheelleft	Weight bearing	5	34.6000	1.81659	.81240
	Non weight bearing	5	36.2000	4.65833	2.08327

Table 2 shows that there was no significant difference of pressure exertion by tarsal bones, metatarsal bones, mid foot, mid heel and lateral heel of left and right feet of the weight bearing and non-weight bearing sports players found.

It also shows that there is significant difference found between the tarsal 2-5 bones of left feet of weight bearing and non-weight bearing sports players at the level of significance of 0.05

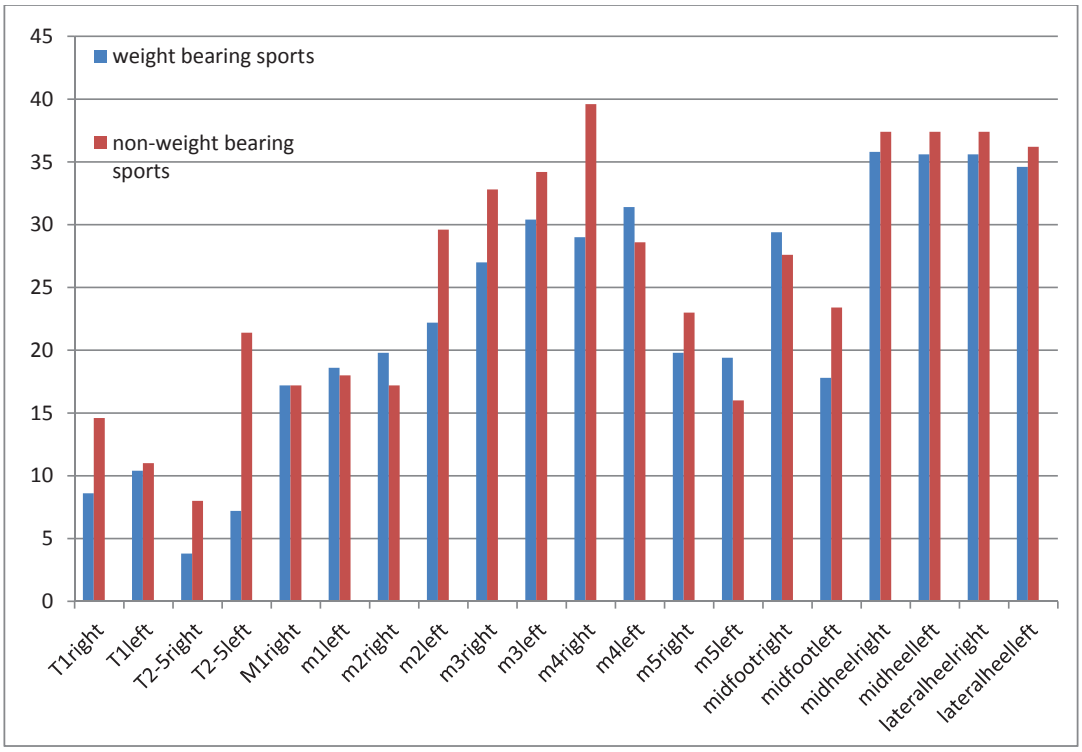

Table 2
Independent *t*-test output

		Levene's Test for Equality of Variances		*T*	*df*
		F	*Sig.*		
Tarsal1right	Break even with differences accepted	1.232	.299	–1.284	8
	Level with fluctuations not expected			–1.284	7.384
Tarsal left	Break even with differences accepted	.930	.363	–.171	8
	Level with fluctuations not expected			–.171	5.889
Tarsal2-5right	Break even with differences accepted	1.304	.287	–2.064	8
	Level with fluctuations not expected			–2.064	7.752
Tarsal2-5left	Break even with differences accepted	5.534	.047	–1.005	8
	Level with fluctuations not expected			–1.005	4.046
Metatarsal1right	Break even with differences accepted	.466	.514	.000	8
	Level with fluctuations not expected			.000	7.087
Metatarsal1left	Break even with differences accepted	3.285	.107	.218	8
	Level with fluctuations not expected			.218	5.811
Metatarsal2right	Break even with differences accepted	1.188	.308	.681	8
	Level with fluctuations not expected			.681	5.828
Metatarsal2left	Break even with differences accepted	.323	.586	–1.180	8
	Level with fluctuations not expected			–1.180	6.409
Metatarsal3right	Break even with differences accepted	.596	.462	–2.464	8
	Level with fluctuations not expected			–2.464	6.317

(*Contd...*)

		Levene's Test for Equality of Variances		*T*	*df*
		F	*Sig.*		
Metatarsal3left	Break even with differences accepted	1.122	.320	–.789	8
	Level with fluctuations not expected			–.789	7.517
Metatarsal4right	Break even with differences accepted	.671	.437	–2.061	8
	Level with fluctuations not expected			–2.061	6.586
Metatarsal4left	Break even with differences accepted	1.564	.246	.563	8
	Level with fluctuations not expected			.563	7.027
Metatarsal5right	Break even with differences accepted	.012	.916	–.804	8
	Level with fluctuations not expected			–.804	7.826
Metatarsal5left	Break even with differences accepted	.846	.385	1.032	8
	Level with fluctuations not expected			1.032	7.610
Midfootright	Break even with differences accepted	3.207	.111	.384	8
	Level with fluctuations not expected			.384	6.472
Midfootleft	Break even with differences accepted	.769	.406	–1.036	8
	Level with fluctuations not expected			–1.036	6.663
Midheelright	Break even with differences accepted	.590	.464	–.716	8
	Level with fluctuations not expected			–.716	7.837
Midheelleft	Break even with differences accepted	1.877	.208	–.723	8
	Level with fluctuations not expected			–.723	6.877
Lateralheelright	Break even with differences accepted	.357	.567	–.795	8
	Level with fluctuations not expected			–.795	7.892
Lateralheelleft	Break even with differences accepted	1.359	.277	–.716	8
	Level with fluctuations not expected			–.716	5.189

4. DISCUSSION

The result of the examination shows that there was noteworthy distinction between tarsal 2-5 bones of the left foot of the groups found that might be because in weight bearing sports athlete's feet get flattened due to regular practice of lifting weights but it was not in case of the non-weight bearing sports athletes. As the feet gets flattened, the arch gets reduced and more surface come in contact to the floor in comparison to non-weight bearing sports athletes. As the athletes are of right handed so most probably their strong foot will be left feet and that's why they put more pressure on it and significant difference is found. The result also shows that there was no significant difference found between other parts of the feet of these groups, this might be because of the athletes are not good performer and their capability was less because they are beginners.

5. CONCLUSION

1. Insignificant difference was found between pressure exertion by tarsal bones, meta-tarsal bones, mid foot, mid heel and lateral heel of left and right feet of the weight bearing and non-weight bearing sports players.

2. Significant difference found between the tarsal 2-5 bones of left feet of weight bearing and non-weight bearing sports players at the level of significance of 0.05.
3. On the basis of result it was concluded that there was not greater contrasts between weight bearing and non-weight bearing games competitors because they all are beginners.

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