

Short Communication

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Correct posture prevalence in professional Salsa-Rhythm dancers in Veracruz

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Abstract

Incorrect body posture during dancing makes it difficult to practice it and favors several types of injuries in dancers. Chiropractic is a science that can diagnose posture problems and correct them. This cross-sectional study identified a prevalence of inadequate posture of 100% in professional salsa dancers, with frontal and lateral posture problems, without a correlation between the elements that compose them, so we conclude that a preventive and correctional chiropractic consultation should be included as a part of the professional dancers' activities.

Introduction

Among the recreational and expressive activities of the human being there is dancing, which also exists in a professional modality, where –among other elements– the technique of the selected rhythm is qualified, being ‘Salsa’ one of those rhythms. Salsa was born during the 70’s in New York thanks to the initiative of some Puerto Rican musicians who were modernizing the Afro-Cuban mambo music, adapting it to their urban style. (McMains, 2016) Salsa has among its technical basis a basic posture for men and women that indicates an upright position, in addition to spins on a right or left axis. Every axis is composed of an imaginary line from the corresponding foot to the head, through the knee, hip and shoulder. To help to stabilize the spins, the sight should be focused on a static point (spot) so the head could be the last one starting the spin and the first one to finish it. (De Rossi, Gallo, & Gonzalez, 2010). Waters and co identified more than 3 decades ago that the anatomic disturbances secondary to subluxations, such as pelvic imbalance, pelvic distortion or cervical syndromes were deeply related with poor performance in dancers. (Waters & Boone, 1988)

Posture can be defined as the relation between all the components of the body regarding its gravity center and it’s associated to a variety of factors such as the muscular tone, the state of the ligaments, joints and bone components (Chahin, 2014) and it’s considered a fundamental element to the adequate biomechanics of a subject, which leads to the integration of the sensitive neurologic system to ensure the position and movement of the body in the space, so the strength to control said position, all of this coming from an adequate function on the musculoskeletal system (Chahin, 2014; Krasnow, Monasterio, Chatfield, & Ph, 2001).

Chiropractic is one of the health branches in charge of diagnosing and treating joint subluxations identified in individuals that, among other situations, could affect their posture and for that, diverse clinical methods and tools are used to identify the pathology of their patients; currently, there are several instruments to evaluate a person’s posture, one of them is the PostureScreen Mobile app, which is validated as a reliable tool for its clinical use, allowing the evaluation of the frontal and lateral posture of the patient in an easy and fast way. (Szucs & Brown, 2018) The objective of this study is to identify the prevalence of correct posture in professional salsa

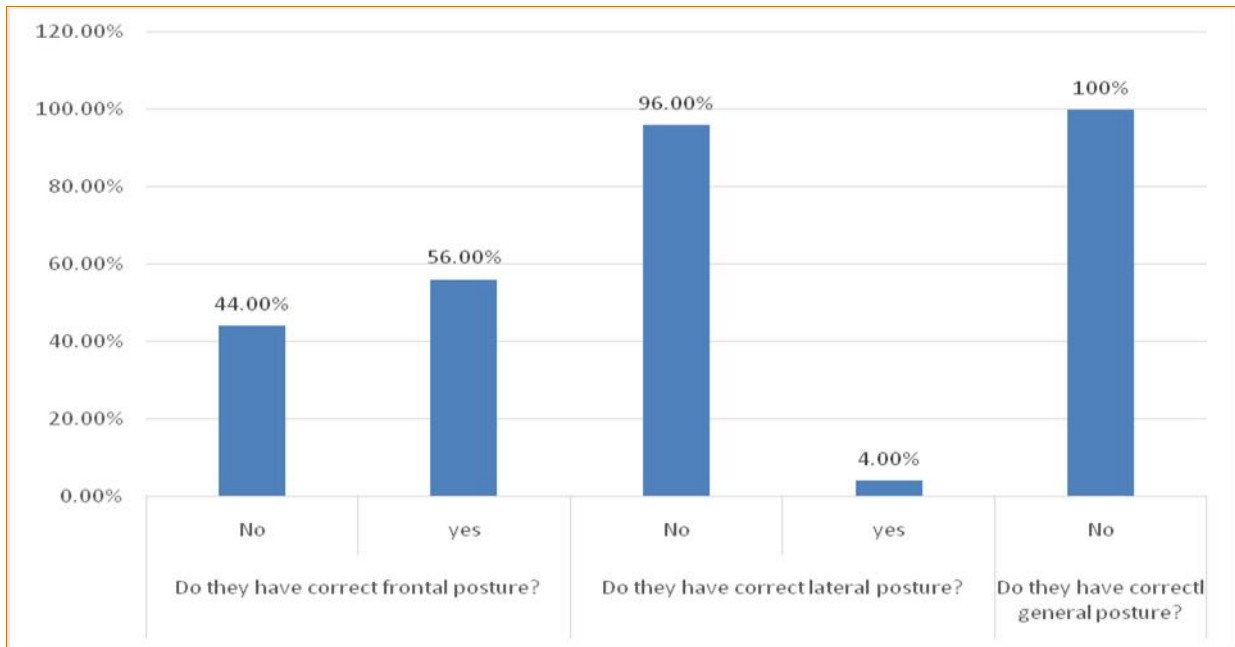
dancers and to establish a correlation between the elements that determine frontal and lateral posture.

Material and Methods

An observational, prospective, cross-sectional, study was made in the city of Veracruz, Veracruz from march 1st 2020 to June 1st 2020; the population of the study was composed by professional salsa dancers, where dancers from two professional academies were included, men and women, between 18 and 25 years old, excluding those who didn’t agree to participate, eliminating those who gave incomplete data. Selected participants were evaluated by the posture-evaluating software ‘Posture Screen’ evaluating frontal and lateral postures, identifying in the frontal posture: head displacement, head inclination, shoulder displacement, shoulder inclination, thoracic displacement, hip displacement, and hip inclination; whereas identifying in the lateral posture head displacement, head real weight, head effective weight, and shoulder, hip, and knee displacement. The statistical analysis was made using SPSS v22 software.

Results and Discussion

25 dancers who fulfilled the inclusion criteria were included to the study, 14 (56%) men and 11 (44%) women, who were part of two professional dancing academies, with an average age of 21.96 (± 4.4) years old. Table 1 shows the prevalence of normal general, lateral and frontal posture of the participants, where we can highlight that 100% of the participants have an abnormal posture, caused mainly by their lateral posture. Concordance between the frontal and lateral posture presents a kappa value of 0.08, as a consequence of the abnormal lateral posture in 14 (58.3%) men and 10 (41.7%) women and of the abnormal frontal posture of 4 (36.4%) men and 7 (63.6%) women. When comparing subjects’ posture by sex, p values >0.05 were obtained for each of the elements that compose the frontal and lateral postures (Table 1). Men sitting hours were of 5.0 (± 3.46) hours a day, compared to women’s 4.91 (± 3.85) hours a day ($p=0.03$). Correlation between every element that compose the frontal and lateral posture, so between the age, time as dancers, and daily sitting time was determined obtaining correlation values $<\pm 0.4$, except for the correlation between effective head weight and lateral head displacement.



Graph 1. Prevalence of correct frontal, lateral and general posture

Table 1. Comparison of postural elements according to sex. Statistical significance with $p < 0.05$. Test used: U of MannWhitney.

	Sex	Mean value (degree)	Standard deviation (degree)	p value
Frontal head displacement	Male	0.68	0.69	0.5
	Female	0.55	0.38	
Frontal head inclination	Male	1.67	1.61	0.6
	Female	2.05	2.19	
Frontal shoulder displacement	Male	0.73	0.41	0.2
	Female	0.51	0.43	
Frontal shoulder inclination	Male	0.67	1.38	0.3
	Female	1.22	1.42	
Frontal thoracic displacement	Male	0.68	0.61	0.3
	Female	0.88	0.34	
Frontal hip displacement	Male	0.71	0.62	0.4
	Female	0.94	0.75	
Frontal hip inclination	Male	0.64	1.28	0.4
	Female	0.25	0.85	
Lateral head displacement	Male	3.05	1.37	0.7
	Female	3.30	2.00	
Head real weight	Male	8.17	10.31	0.2
	Female	4.40	0.53	
Head effective weight	Male	21.23	9.97	0.5
	Female	18.57	11.21	
Lateral shoulder displacement	Male	1.25	1.45	0.2
	Female	2.04	1.65	
Lateral hip displacement	Male	1.39	1.60	0.9
	Female	1.42	1.39	
Lateral knee displacement	Male	3.41	1.96	0.1
	Female	2.19	1.65	

Table 2. Pearson's correlation between front and side posture elements of salsa dancers, the Age, the time as a dancer and the Sitting times during the day. a: displacement; b: inclination; c: correlation value; p: value of p. Statistical significance with $p < 0.05$ (**)

		Age	Frontal head ^a	Frontal head ^b	Frontal shoulders ^a	Frontal shoulders ^b	Frontal thoracic ^a	Frontal hip ^a	Frontal hip ^b	Lateral head ^a	Head real weight	Head effective weight	Lateral shoulders ^a	Lateral hip ^a	Lateral knee ^a	Time dancing	Sitting time
Age	C	1	-.23	-.338	-.160	-.098	-.316	.136	-.115	-.166	.178	-.074	.022	-.198	.182	.390	-.202
	p		.25	.099	.445	.642	.123	.518	.583	.428	.395	.724	.919	.343	.384	.054	.332
Frontal head ^a	C	-.23	1	.044	.307	-.220	-.272	-.352	.248	-.103	-.136	-.048	.113	-.244	-.141	-.184	.351
	p	.256		.835	.136	.291	.188	.084	.231	.625	.516	.819	.592	.240	.500	.378	.085
Frontal head ^b	C	-.33	.04	1	-.049	-.093	.231	.260	-.048	.550**	-.219	.452**	.233	.167	.046	-.052	.045
	p	.099	.83		.815	.658	.267	.210	.818	.004	.292	.023	.263	.426	.826	.807	.830
Frontal shoulders ^a	C	-.16	.30	-.049	1	-.024	-.126	.083	-.005	-.030	.139	-.036	-.063	.307	.019	-.256	.264
	p	.445	.13	.815		.909	.547	.694	.980	.887	.508	.864	.764	.135	.928	.217	.203
Frontal shoulders ^b	C	-.09	-.22	-.093	-.024	1	.464**	.250	-.291	.047	-.179	-.133	-.181	-.022	-.071	.105	-.024
	p	.642	.29	.658	.909		.019	.228	.158	.824	.391	.525	.386	.918	.738	.618	.908
Frontal thoracic ^a	C	-.31	-.27	.231	-.126	.464**	1	.005	-.040	.179	-.334	.098	-.224	.045	-.159	.105	-.046
	p	.123	.18	.267	.547	.019		.980	.850	.392	.103	.642	.282	.832	.449	.619	.828
Frontal hip ^a	C	.136	-.35	.260	.083	.250	.005	1	-.366	.377	.044	.321	.057	.181	.021	.039	-.158
	p	.518	.08	.210	.694	.228	.980		.072	.063	.833	.117	.788	.386	.920	.852	.452
Frontal hip ^b	C	-.11	.24	-.048	-.005	-.291	-.040	-.366	1	-.163	-.065	-.034	-.271	-.135	-.193	-.170	.006
	p	.583	.23	.818	.980	.158	.850	.072		.437	.756	.871	.191	.521	.356	.416	.977
Lateral head ^a	C	-.16	-.10	.550**	-.030	.047	.179	.377	-.163	1	.115	.912**	.290	.223	.371	-.268	.094
	p	.428	.62	.004	.887	.824	.392	.063	.437		.586	.000	.160	.284	.068	.195	.656
Head real weight	C	.178	-.13	-.219	.139	-.179	-.334	.044	-.065	.115	1	.133	-.155	-.169	.133	.093	-.230
	p	.395	.51	.292	.508	.391	.103	.833	.756	.586		.527	.461	.420	.528	.660	.270
Head effective weight	C	-.07	-.04	.452**	-.036	-.133	.098	.321	-.034	.912**	.133	1	.267	.239	.406**	-.208	.059
	p	.724	.819	.023	.864	.525	.642	.117	.871	.000	.527		.196	.249	.044	.318	.781
Lateral shoulders ^a	C	.022	.113	.233	-.063	-.181	-.224	.057	-.271	.290	-.155	.267	1	.357	.245	-.050	.322
	p	.919	.592	.263	.764	.386	.282	.788	.191	.160	.461	.196		.080	.237	.814	.117
Lateral hip ^a	C	-.19	-.244	.167	.307	-.022	.045	.181	-.135	.223	-.169	.239	.357	1	.285	-.070	-.117
	p	.343	.240	.426	.135	.918	.832	.386	.521	.284	.420	.249	.080		.167	.739	.577
Lateral knee ^a	C	.182	-.141	.046	.019	-.071	-.159	.021	-.193	.371	.133	.406**	.245	.285	1	-.150	.166
	p	.384	.500	.826	.928	.738	.449	.920	.356	.068	.528	.044	.237	.167		.475	.429
Time dancing	C	.390	-.184	-.052	-.256	.105	.105	.039	-.170	-.268	.093	-.208	-.050	-.070	-.150	1	-.124
	p	.054	.378	.807	.217	.618	.619	.852	.416	.195	.660	.318	.814	.739	.475		.555
Sitting time	C	-.20	.351	.045	.264	-.024	-.046	-.158	.006	.094	-.230	.059	.322	-.117	.166	-.124	1
	p	.332	.085	.830	.203	.908	.828	.452	.977	.656	.270	.781	.117	.577	.429	.555	

These results show a general problem in all of the dancers' posture, which could hinder the dancers' technical performance according to the indicated on the literature, where the importance of the posture, gestures and positions is referred in order to reach the adequate corporal expression during the 'Salsa' type dance.(Ortega, 2017; Waters & Boone, 1988)

It has been shown that the main injuries of the dancers are back and lower extremities injuries (Hincapié, Morton, & Cassidy, 2008), which many times are generated for fails in the technique during the execution of the dance (Gelabert, 1986), so chiropractic must be considered as a necessary element among the routine evaluation in salsa dancers, because in case of detecting any abnormality in the posture, a treatment from the chiropractic could be initiated. We must emphasize that, apart from the own posture benefits, literature has reported beneficial emotional and systemic benefits when making prophylactic adjustments in patients that don't show any active symptoms. (Hannon, 2004)

Finally we must highlight the lack of correlation between the frontal and lateral postural elements, so the patient must always be evaluated frontally and laterally, and receive specific treatment to correct both aspects independently.

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